Exploring sources of competitive advantage in e-business applications: A cross-industries case study in mainland China

Thesis

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EXPLORING SOURCES OF COMPETITIVE ADVANTAGE IN E-BUSINESS APPLICATIONS

A Cross-Industries Case Study in Mainland China

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Abstract

A review of existing literature revealed that little theoretical framework exists to capture e-business-enabled value creation through an integrated approach that includes the environmental view and resource-based view (RBV). Furthermore, little empirical research has been conducted to test these theoretical frameworks, in particular in the Chinese business context. The aim of this research is to extend the theoretical and practical understanding of e-business-enabled sources of competitive advantage (SCA) in China. The value chain (VC) concept, virtual value chain (VVC) framework and RBV were identified from the literature as the key constructs to underpin the theoretical basis. The research design used a qualitative research methodology consisting of in-depth case studies of nine leading Chinese companies in three industries - housing development, manufacturing, and B2C.

The principle finding is the formulation of a theoretical framework for investigating e-business value creations which integrates the key constructs of the VVC, online information capabilities (OIC), value system and RVB. This research also proposes a typology of five generic types of key e-business applications which states clearly the relationships between key e-business applications and SCA. Finally, this research demonstrates that e-business value creation features differently between two groups: Internet pragmatist and Internet pioneers.

The research offers a number of contributions to the field of e-business value creation. Firstly, it introduces the concepts of OIC and value system to the VVC. It also provides empirical test of the analytical framework. In addition, this research provides an in-depth understanding of the relationships between types of e-business applications and key SCA. Finally, this research identifies and explains the key differences and similarities between the three industries, within each industry, and between the two key groups.

Preface

I declare that this thesis has not been submitted for any other qualification to this or any other university. The material is original, except where reference is made to other sources.

Accounts of some parts of this work have been published in the following papers:

Tao, Y., Hinton, C.M., and Little, S.E. (2006) 'The challenge of e-business in China: exploring competitive advantages within the electrical appliance industry', *Information Resources Management Association Conference*, Washington DC, 21-24 May, 2006.

Tao, Y., Hinton, C. M. and Little, S. E. (2005) 'Exploring sources of competitive advantage: e-business applications within Chinese home appliance industry', *IADIS International Conference: E-commerce 2005,* Porto, Portugal, 15-17 December, 2005.

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LIST OF ABBREVIATIONS

B2B	Business-to-Business
B2C	Business-to-Consumer
BBS	Bulletin Board System
CA	Competitive Advantage
CRM	Customer Relationship Management
EB	Electronic-Business
EC	Electronic-Commerce
EDI	Electronic Data Interchange
EIP	Enterprise Information Portal
ERP	Enterprise Resource Planning
HRM	Human Resource Management
ICT	Information and Communication Technology
IS	Information System
IT	Information Technology
KM	Knowledge Management
KMP	Knowledge Management Platform
MMO	Massively Multiplayer Online
OIC	Online Information Capabilities
PVC	Physical Value Chain
RBV	Resource-Based View
R&D	Research & Development
SCA	Sources of Competitive Advantage
SCM	Supply Chain Management
SMEs	Small and Medium Enterprises
VCM	Value Chain Management
VS	Value System

VVC	Virtual Value Chain

CHAPTER 1 BACKGROUND INFORMATION AND THESIS OVERVIEW

1.1 Introduction

This chapter aims to provide the relevant background information on this research and an overview of the content of the thesis. It begins with an introduction to the background and explanation of the research need, followed by the key research questions and research objectives. The chapter then introduces the contribution of the research to both industry and academia. An outline of the research methodology is presented and the chapter concludes with an overview of each of the subsequent chapters within the thesis.

1.2 The background and need for research

1.2.1 Chinese economy

Since initiating economic reforms and an open policy in 1978, China has achieved tremendous success in economic development. China now is the fastest growing economy in the world (CountryWatch, 2010), with GDP expanding at an annual average rate of 9.7 percent between 1978 and 2009 (NBSC, 2010).

However, at the same time, China faces key challenges such as the lack of efficiency and innovative capability as well as the losing of low-cost advantage. In response, China aims to improve the competitiveness of the national economy through developing industrialisation and informatisation at the same time (Gov.cn, 2006). The strategy of transitions is to restructure industrial structures, foster strategic emerging industries (e.g. information networks and high-end manufacturing industries), promote accelerated development of the service sector. As a consequence,

the government is hoping to build an innovation-oriented country (Wen, 2009, Wen, 2010).

According to China's 11th Five-Year Plan (plan for 2006-2010), four key approaches of improving the competitiveness of the national economy are: (1) to increase urbanisation, (2) to upgrade Chinese manufacturing industry in the global supply chain by focusing on higher value-added services; (3) to strengthen the service industries and (4) to use information technology to stimulate industrialisation (Gov.cn, 2006). China hopes to develop industrialisation and bring about an information revolution at the same time.

1.2.2 E-business development in China

Internet-based e-commerce was launched in China in 1997, and grew rapidly up until the collapse of the dot-com bubble in 2000 (Guo and Chen, 2005, Tan et al., 2007). In recent years, e-business in China has been experiencing large-scale diffusion. By 31 December 2009, the number of Chinese Internet users reached 384 millions, making China the largest Internet market in the world (CNNIC, January 2010). The Internet applications of Chinese Internet users are changing from entertainment to business. 2009 was the year of large-scale development for business applications. Based on the growth rate, business transaction applications, with an average annual growth of 68% in 2009, are the fastest growth area among the major Internet applications (CNNIC, January 2010).

The scale of e-business development in China is large enough to be noticed at the global level. According to CNNIC (January 2010), in 2009, the size of online shopping transactions in China reached RMB250 billions (approximately US$ 31.65 billion), a double growth compared to 2008. The rise of e-commerce also fits the Chinese government's economic strategy of promoting domestic consumption and reducing

reliance on exports. "What is most interesting is the level of mainstream acceptance of using online retail channels to shop for everyday items." (Jonathan Lu, president of Taobao cited in Lee, 2009) Taobao.com is the most successful e-commerce company widely considered as China's eBay.

Nevertheless, e-business adoption in China is still low, and applications narrow. Though the Internet penetration rate is rising continuously, reaching 28.9% in December 2009, compared with the developed countries, China's Internet penetration rate is still low (CNNIC, January 2010). As of December 2009, the penetration rate for USA, Japan, and Korea was 74.1%, 75.5% and 77.3%, respectively (CNNIC, January 2010) . Hence, China's Internet use still lags behind developed countries.

1.2.3 Research gap

Research has shown that e-business plays an important role in competitive advantage. For example, Porter (2001) suggests that strategies that integrate the Internet and traditional competitive advantages should win in many industries. Piccoli and Ives (2005) suggest that since the early 1980s, considerable research has demonstrated that IT can be used to create competitive advantage through efficiency improvements, differentiation, and channel domination.

Both Porter (2001) and Fahy and Hooley (2002) suggest that dot-coms and established companies are facing different strategic imperatives. We have seen this distinct difference among Chinese industries in terms of e-business applications. For example, in the e-commerce oriented (EC) industry, companies boldly imitate the practices of 'global leading players' in e-business applications and adapt these applications to the Chinese context. In the manufacturing industry, it has become a common practice to adopt e-business in order to achieve operational efficiency, while in the housing development industry, e-business is still perceived as an experiment. To take full

advantage of the opportunities offered by e-business, companies need to understand e-business' impact on their industry and know how to use e-business to realize efficiency improvements and competitive advantage.

A review of the literature indicates that Porter's value chain model is an influential framework for examining value creation in e-business (Amit and Zott, 2001, Peppard and Rylander, 2006, Li and Whalley, 2002, Barnes and Hinton, 2004). However, it is suggested that transformation is needed to make this framework more suitable for the e-business environment (Rayport and Sviokla, 1995, Weiber and Kollmann, 1998, Li and Whalley, 2002, Peppard and Rylander, 2006). Some research has been done in this area. For example, Rayport and Sviokla (1995)'s work on the virtual value chain model is well accepted. Moreover, some researchers (e.g. Amit and Zott, 2001) suggest that, in order to capture the richness of value creation from e-business, an integrated approach that includes the received theoretical perspectives is more suitable. Fahy and Hooley (2002) also suggest that both environmental and resource based views are important in explaining the nature of competitive advantage in the e-business environment.

However, little theoretical improvement has been done to adapt the value chain framework in the e-business environment except Rayport and Sviokla (1995)'s work on the virtual value chain. Moreover, little theoretical progress has been made to capture value creation from e-business through an integrated approach, which includes environmental and resource based views. Furthermore, little empirical research has been conducted to test the frameworks of value creation from e-business, especially in a specific industry. This research attempts to fill these gaps by investigating the impact of e-business on the competitive advantage of both dot-coms and established companies. The value chain model and its transformations as well as resource based views will be the main theoretical perspectives.

Meanwhile, China is an interesting research context. The fast growing Chinese economy has attracted tremendous attention. And the large-scale development in B2C in

China in recent years seems to offer promising opportunities for both Western and Chinese companies. Although renowned Western companies such as Amazon.com and Ebay.com have played important roles in the market, so far, the most successful players are the indigenous Chinese companies such as Alibaba.com and Taobao.com.

Guo and Chen (2005) suggest that Chinese companies generally use IT differently from their western counterparts. Therefore, it is worth investigating how Chinese companies adopt new technologies and studying the patterns that are emerging. On the one hand, Chinese companies act as followers in e-business diffusion, hence they are able to start with more advanced technologies available, learn successful Western business models and are less bothered with the problems caused by legacy systems (Chen et al., 2007, Guo and Chen, 2005). On the other hand, Western models face some unique challenges in China because of the under-developed online payment and physical delivery systems as well as its unique socialist market economy (Martinsons, 2002). Hence, Martinsons (2002) suggests that Chinese companies need to adopt distinctive forms of e-business with Chinese characteristics. Haley (2002) also suggests that, in emerging markets such as China, alternative models, which take consideration of local context, may be more preferable than US models.

This research aims to provide deep insights on leading Chinese companies' e-business applications across three industries—manufacturing, dot-coms, and housing development. This research also observes the adoption and diffusion of western models in a Chinese context, and this insight is of value to both Western and Chinese companies seeking to exploit the expanding Chinese consumer economy.

1.3 Research questions

To address the problems stated in the research background, the following key research questions are proposed, in the context of Chinese industries:

Question 1. How have Chinese companies created competitive advantage by using e-business?

Question 2. How have Chinese companies developed or adapted e-business strategies?

Question 3. Are there differences between sectors in the use of e-business? Are there differences between firms in the same sector in the use of e-business?

Question 4. Does Porter's value chain provide a framework to capture such differences and guide companies in the use of e-business to gain competitive advantage?

These questions help to formulate the research objectives.

1.4 Research objectives

This research aims to propose a holistic framework which provides a systematic way to examine e-business' impact on sources of competitive advantage.

The sub-objectives in support of the above aim are:

Objective 1. To identify the key aspects of e-business mentioned by the Chinese companies.

Objective 2. To identify the key motivations of e-business adoption by the Chinese companies.

Objective 3. To propose a framework to categorize the key value-adding e-business applications adopted by the Chinese companies.

Objective 4. To investigate the relationships between key e-business applications and sources of competitive advantage.

Objective 5. To propose a framework to adopt an e-business strategy to gain competitive advantage.

Objective 6. To identify the key changes that need to be managed in order to cope with e-business implementation.

Objective 7. To identify industrial factors in the use of e-business.

This research helps gain new insights into e-business applications from a Chinese industry-specific perspective. It also provides empirical support for the modes of transformation of the value chain framework in an e-business context. This research proposes an integration of environmental and resource based views when investigating sources of competitive advantage in the e-business environment.

1.5 Research benefits

This research brings a number of benefits to both the industry and academia:

- Industry: the Chinese industry-specific insights of e-business applications are useful in helping companies to improve their e-business applications by seeing the development patterns and learning from other industries. Moreover, the proposed framework provides a systematic way to exploit e-business to contribute to sources of competitive advantage with operational feasibility.
- Academia: the transformation of the value chain framework in the e-business context provides other researchers with empirical evidences as well as new theoretical perspectives.

1.6 Research methodology review

The dynamic context of the research phenomenon and the nature of the key research questions position this research in the tradition of social constructionism. The lack of solid prior theorizing about the topic/subject makes the inductive case study approach an appropriate choice of methodology (Eisenhardt, 1989). Semi-structured qualitative interviews were conducted to gain insight on how managers construct the reality of e-business phenomenon formed from the companies' capabilities and values having been

developed over time in order to help companies gain advantages from e-business.

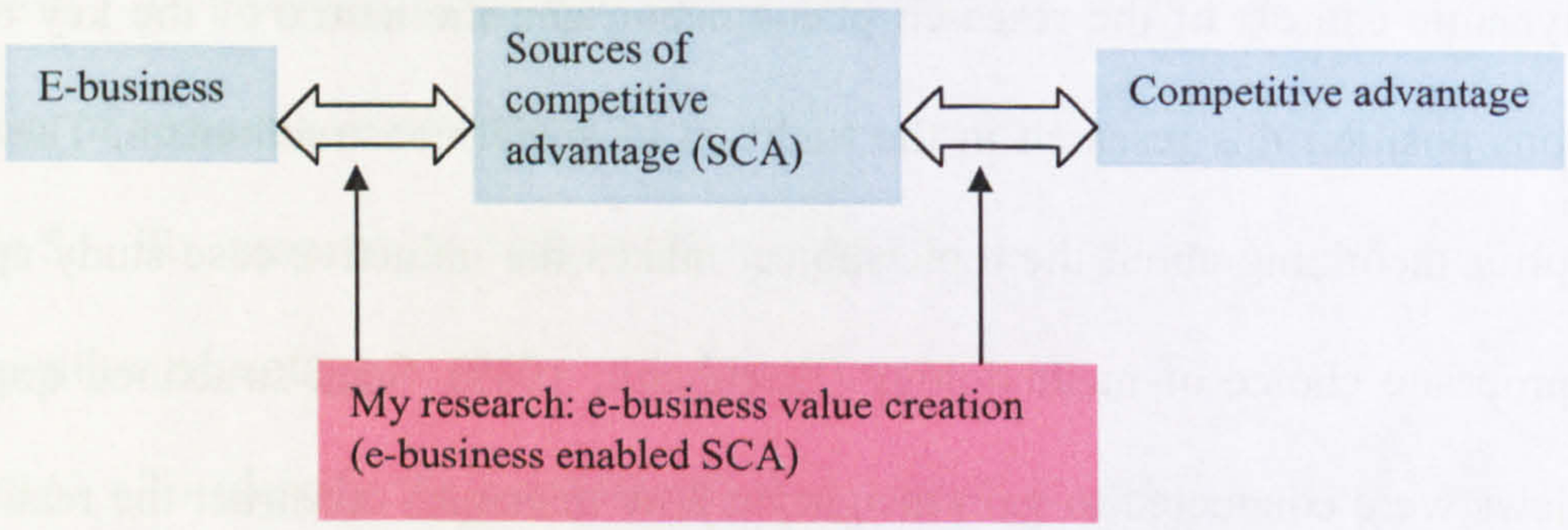
The first stage is a literature review conducted to formulate key research questions and core interview questions. In the light of these research questions, data collection was carried out in two stages, occurring in 2004 and 2005 respectively. Interviews were carried out with managers responsible for e-business or information system management and/or general managers. All the interviews were in-depth, semi-structured, face-to-face interviews. Meanwhile, by combining the secondary data between 1999 and 2011, this research provides a longitudinal perspective of multiple case companies.

The case companies were located in three sectors, namely manufacturing, housing development, and e-commerce/dot-coms. The influences from both Yin (1994)'s work in case study and an ethnographic approach and grounded theory approach have laid the foundation for the process of data collection and analysis.

1.7 The scope of the research

Given the research questions and aims as stated above, it is possible to draw clear boundaries around the study. This research falls into two broad discipline domains: strategic management and e-business. The focus of this research is to develop a linkage between the two domains by exploring e-business' impact on sources of competitive advantage (shown in Figure 1-1).

Figure 1-1: Research focus – e-business enabled value creation



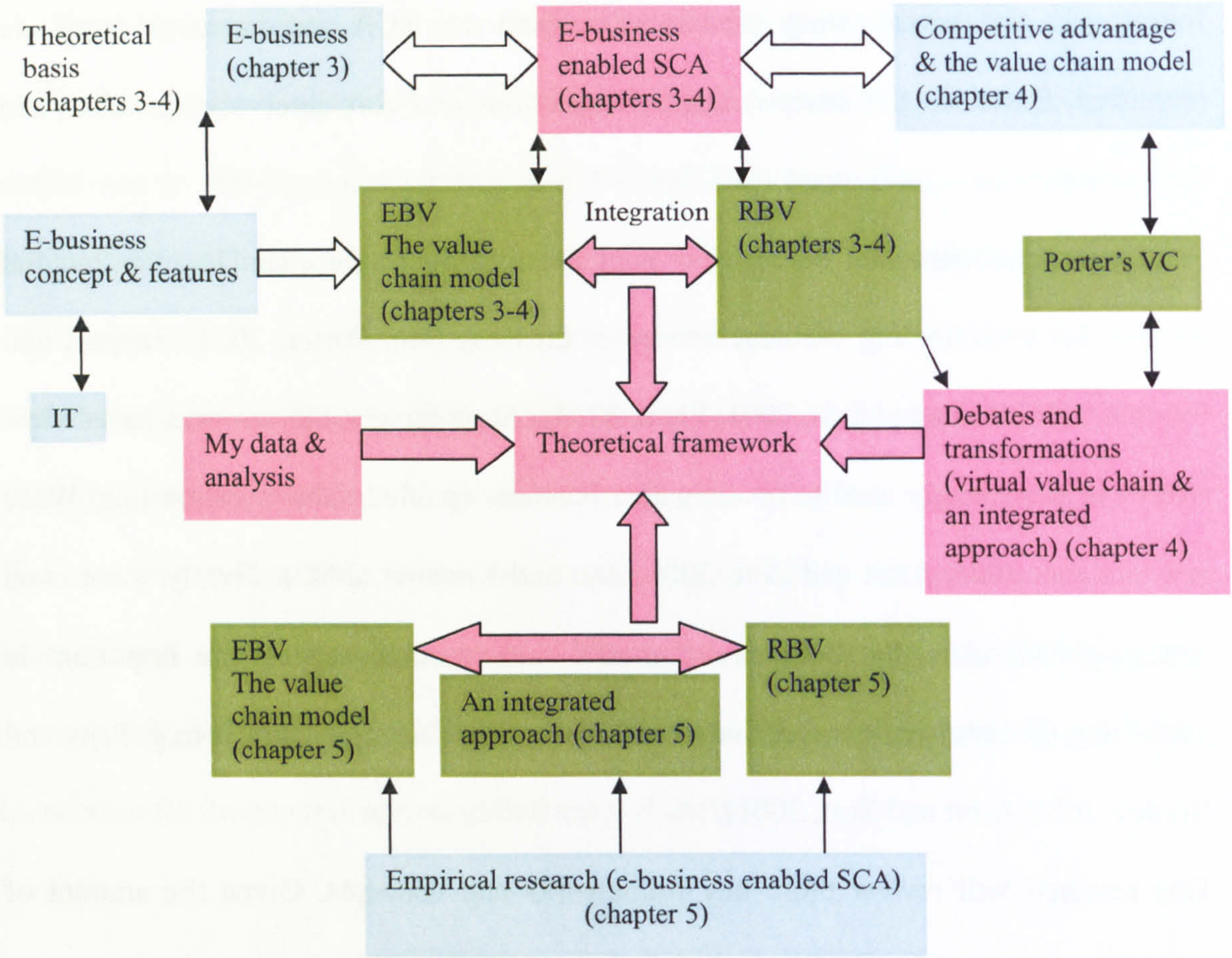
To begin, the existing literature of e-business and competitive advantage will be

reviewed centring on e-business enabled SCA. Based on this review, two key frameworks for investigating e-business' impact on SCA and research gaps are identified. Based on this review, research questions and core interview questions are formulated.

Firstly, the environmental based view suggests that the value chain is an influential concept for investigating e-business' impact on SCA (e.g. Porter, 2001, Rayport and Sviokla, 1995, Amit and Zott, 2001, Phan, 2003). Alternatively, the resource-based view (RBV) is increasingly used to investigate e-business enabled value creation (e.g. Wade and Hulland, 2004, Amit and Zott, 2001, Zhu and Kraemer, 2002). Finally, there is an emerging consensus that both environmental and resource aspects are important in explaining the nature of competitive advantage in the e-business context (e.g. Fahy and Hooley, 2002, Amit and Zott, 2001).

This research will review these key frameworks and concepts. Given the amount of material under review, which includes two separate domains (i.e. e-business and competitive advantage) and three discrete areas (i.e. two theoretical bases and a review of empirical research), the review of the literature will be presented in three chapters. Chapter 3 will explore e-business concepts first, and then introduce the two key theoretical frameworks for investigating value creation of e-business: the value chain framework and the RBV. In order to capture the richness of e-business value creation and explore the linkage between these two frameworks, Chapter 4 will give a thorough review of the value chain model and situate the model in a broader theoretical context. Based on the reviews, a virtual value chain and an integrated approach are suggested. In order to operationalise the theoretical frameworks, Chapter 5 will explore empirical research on the impact of e-business on competitive advantage. Figure 1-2 shows the mind-map for literature review.

Figure 1-2: A mind-map for literature review

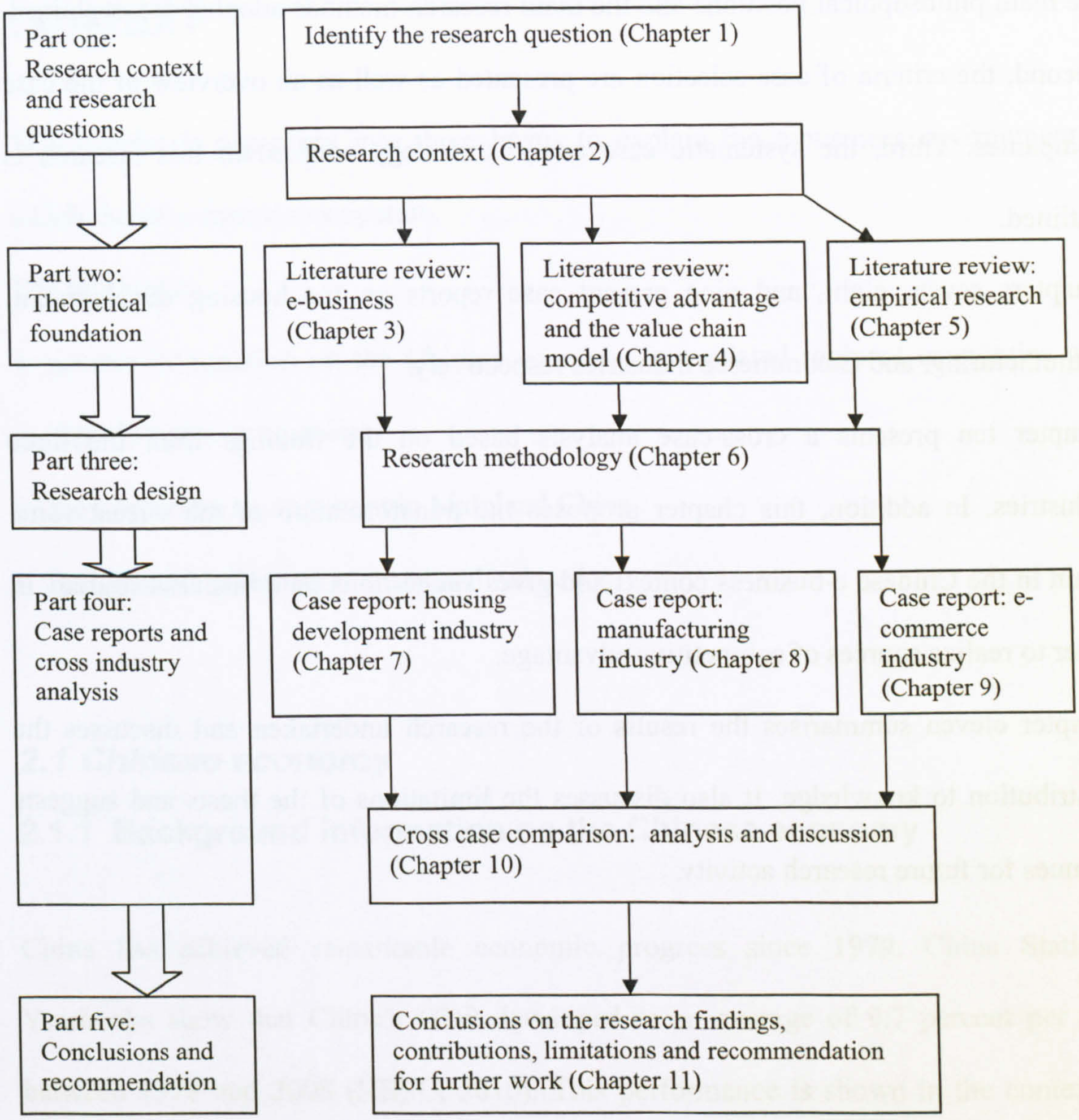


EBV: environmental based view; RBV: resource-based view

1.8 Thesis overview

This thesis is divided into five parts which are presented in 11 chapters (shown in Figure 1-3).

Figure 1-3: The framework of the thesis



Chapter two explains the e-business environment in which the case companies operate.

Chapter three focuses on a review of the literature on e-business. The main purpose is to identify e-business' impact on sources of competitive advantage. An integrated approach that combines the value chain framework and resource-based view is adopted.

Chapter four reviews the literature on competitive advantage and the value chain framework. This chapter investigates the effectiveness of the value chain framework in the e-business context and the transformation of the framework in the digital economy.

Chapter five analyses the empirical research to-date on the impacts of e-business application on competitive advantage for the purpose of giving insights on how exactly to make this research operational.

Chapter six describes in details the research methodology adopted by this thesis. First, the main philosophical positions and the main research methods adopted are explained. Second, the criteria of case selection are presented as well as an overview of the case companies. Third, the systematic case analysis strategy adopted in this research is outlined.

Chapters seven, eight, and nine present case reports on the housing development, manufacturing, and E-commerce industries respectively.

Chapter ten presents a cross-case analysis based on the findings from the three industries. In addition, this chapter proposes the transformation of the virtual value chain in the Chinese e-business context and gives suggestions on e-business strategy in order to realize sources of competitive advantage.

Chapter eleven summarises the results of the research undertaken and discusses the contribution to knowledge. It also discusses the limitations of the thesis and suggests avenues for future research activity.

CHAPTER 2 THE BACKGROUND OF THE RESEACH CONTEXT

This chapter is organized into three levels to explain the e-business environment in which the case companies operate.

The levels are:

- generic information on the Chinese economy and related regional economies with regard to case companies,
- the e-business environment in Mainland China,
- background information on related industries.

2.1 Chinese economy

2.1.1 Background information on the Chinese economy

China has achieved remarkable economic progress since 1979. China Statistics Yearbooks show that China's GDP developed at an average of 9.7 percent per year between 1978 and 2008 (NBSC, 2010). This performance is shown in the context of complex structural reforms and market-oriented institutional development. The structural transformations include movement from central planning to markets, agriculture to manufacturing and services, and from a closed to a globally-integrated economy (Brixi and Brahmbhatt, 2003).

Since 1978, China has concentrated on socialist modernization and the reform and opening-up policy. China's plans are to realise modernization and increase per-capita GNP to the level of medium-developed countries. It is hoped that this will be achieved by the mid-21st century (Gov.cn, 2006d).

Economic reforms began within rural areas in 1978, and were extended to the cities in 1984. In 1992, the Chinese government set out its main principles for economic

restructuring (Gov.cn, 2006b):

Encouraging the development of diversified economic elements, the government attempted to retain the dominance of the public sector. From 1997, the Chinese government stressed the importance of its non-public sector within the national economy. Profitability was encouraged through essential factors of production; for example, capital and technology, i.e.

- creation of a modern enterprise system to meet the requirements of the market economy;
- creation of a unified and open market system across China, linking domestic and international markets, and promoting the optimization of resources;
- transformation of government economic management in order to establish a complete macro-control system;
- encouraging certain lead groups and areas to become rich first, thus enabling them to help poorer regions towards prosperity;
- formulation of a China-appropriate social security system for both urban and rural residents.

This would then lead to the promotion of overall economic development and ensure social stability.

China adopts the "five-year-plan" strategy for economic development. In its Tenth Five-Year Plan (2000-2005), China mapped out the first plan for the new century, which reinforced the continuous improvement of the socialist market economy and the efforts of transforming state-owned enterprises into modern enterprises (Gov.cn, 2006a). This strategic restructuring of the economy with emphasis on the industrial structure as well as improving China's competitive edge, then allowed greater participation in international cooperation and competition.

In its eleventh Five-Year Plan (2006-2010), China proposed four key approaches of improving the competitiveness of the national economy (Gov.cn, 2006): (1) increasing

urbanisation, (2) upgrading Chinese manufacturing industry in the global supply chain by focusing on higher value-added services; (3) strengthening the service industries and (4) using information technology to stimulate industrialisation. China hopes to develop industrialisation and bring about an information revolution at the same time.

As the drafting process for China's twelfth Five-Year Plan (2011-15) continues, top priorities for the next five years have emerged (i.e. economic restructuring, industry structure and new energy) (CBR, 2010): (1) China will focus on shifting economic growth away from reliance on exports and investment toward domestic consumption; (2) Industry-related policies will aim to accelerate the growth of China's services industries; (3) The plan will set capacity quotas for four types of new energy: hydro, nuclear, solar, and wind.

Meyer (2008) argues that China has largely completed the first transition from a command to a market economy. And now China is experiencing the second transition from regional to national markets and from decentralised group corporations to globally integrated firms.

Similarly, Harlem and Schramm (2009) suggest that consolidation within industries will be a central theme in China's efforts to restructure its industries and promote industrial modernization in the coming years. They argue that China's economic growth in the next few years will rely more on productivity improvement realised through technological progress. Part of this progress will occur as result of industrial consolidation.

Despite the success of rapid growth, China faces key challenges such as the lack of efficiency and innovative capability, the losing of low-cost advantage as well as industrial overcapacity. In response, the Chinese Government will speed up the transformation of the economic development mode by renovating key industries, fostering strategic emerging industries (e.g. information networks and high-end manufacturing industries), promoting accelerated development of the service sector, and

improving the overall quality and competitiveness of the national economy. Moreover, the government is enhancing its efforts to build an innovation-oriented country and to implement the strategy of developing human resources.(Wen, 2009, Wen, 2010)

2.1.2 Chinese regional economies

National performance is a composite of very different levels of regional performance (Porter, 2003). Porter (2003) suggests that regional analysis must become far more central to research and policy formulation in competitiveness and economic development. As mentioned earlier, the main principles of economic restructuring set by the Chinese government include the policy of encouraging certain lead groups and areas to become rich first. This then led to distinct regional differences in the levels of economic development. This can be observed at different levels:

- between urban and rural areas,
- among provinces and sub-regions,
- among the development belts (such as costal, interior, and western; or East China, Middle China, and West China. An introduction to the development belts is given in Appendix 1)

The coastal region development strategy of the 1980s and 1990s has played a significant role in affecting growth outcomes in different regions of China.

In May 1980, the Chinese government decided to establish four special economic zones in the cities of Shenzhen, Zhuhai, and Shantou and Xiamen (in Fujian province). The establishment of these zones proved to be a significant method by which China could use overseas funds and draw on advanced experience on technology and management from foreign countries (Gov.cn, 2006c).

In May 1984, the Chinese government decided to open another 14 coastal port cities. Areas such as the Yangtze River Delta, the Pearl River Delta, the southeast Fujian

Province and the Bohai Sea Rim, were opened to the outside world for economic development. Hainan Island Province was established as another special economic zone. Having a population of about 200 million, these coastal areas then boosted nationwide reform and economic construction with their extensive opening and fast economic development (Gov.cn, 2006c).

Nevertheless, simultaneously, inequalities in China deepened as the distribution of income and opportunities shifted in favour of urban areas and coastal regions. Price liberalization and trade expansion during 1985-1992 mainly boosted productivity in the industrial sector, and as a direct result, disproportionately elevated urban incomes. Foreign direct investment took off in the early 1990s bringing technology and export competitiveness to China's costal regions. While the inland and western regions were disadvantaged by low agglomeration as scarce skills and expensive transport fell behind. (Brixi and Brahmbhatt, 2003)

In addition, under the policy of administrative decentralization, local governments rather than the central government initiated most reforms. Consequently, China evolved into several regional economies rather than one. The Pearl River delta (eastern Guangdong Province), the Yangtze River delta (Shanghai, southern Jiangsu Province, Zhejiang Province) and the Bohai Bay (extending in an arc from Qingdao to Dalian, including Tianjin and Beijing) regions (See appendix 1 for more information on these economic belts) became the hot spots of the Chinese economy. Provinces competed for GDP growth and erected barriers to interprovincial trade (Meyer, 2008).

Meanwhile, most of the technology-led growth in China was concentrated in a relatively small geographical area of coastal cities (East China) (Brixi and Brahmbhatt, 2003). Compared to East China, growth in West and Central China was more capital-intensive, with capital per worker rising faster than in East China (Jefferson and Su, 2002).

Economic development in the regions of the case companies

All the case companies are located in Shenzhen, Huizhou (the Pearl River delta), Beijing, Qingdao (Bohai Sea Rim), and Shanghai (the Yangtze River delta). These regions feature higher productivity, higher urban incomes, and more advanced economic development than the national average. A more detailed explanation on the Internet development in these regions is given in the **section 2.2.2**.

2.2 E-business environment in Mainland China

2.2.1 China's national information infrastructure (NII)

China's NII endeavours consist of four levels (Blanning et al., 1997, Chen, 2005): building national physical information infrastructure through the 'Three Golden Projects', developing industrialization and the information revolution simultaneously, software development, and training of IT personnel.

The 'Three Golden Projects' consist of three sub-projects: Golden Bridge, Golden Card, and Golden Custom.

The Golden Bridge project is a phased development project concerned with constructing an economic information network, which incorporates both satellite and landline networks. These networks include financial information systems associated with China's bank modernization program together with an information infrastructure for tourism, meteorology, scientific and technical information, government departments, provinces and cities, and state-owned enterprises.

The Golden Card project is a credit card verification scheme designed to promote the use and dissemination of credit cards. The Golden Custom project is a foreign trade information network linking the Ministry of Foreign Trade and Economic Cooperation and the Customs Bureau.

Meanwhile, under the e-government projects started in 1999, central and local governments were required to establish websites and provide online services. In 2003, the Golden Projects were merged with the e-government programme and expanded into 12 government service fields. The development of these 12 Golden Projects are estimated to be worth as much as CNY200bn (US$25.32bn) in demand for IT products and services.(BMI, 2010b)

In 2008 the Chinese government created a new Ministry of Industry and Information Technology (MIIT), which is responsible for approving and promoting industry

standards, pushing technology innovation, guiding the development of China's information infrastructure and ensuring China's information security.(BMI, 2010a)

The creation of the new ministry reflects a greater emphasis on promoting informatisation. China's National Informatisation Development Strategy Guidelines 2006-2010 state that the government will promote informatisation in a number of sectors, which include long-distance health care, long-distance education, e-commerce, e-government and agriculture. The programme also calls for a focus on China's SME sector. (BMI, 2010a)

2.2.2 The Internet development in China

After over more than ten years of development, the Internet has significantly influenced Chinese society and Chinese Internet users. China had 384 million Internet users by December 31, 2009, making it the largest Internet population in the world (CNNIC, January 2010).

CNNIC has divided Internet applications into four categories: online information, online entertainment, online consumer, and online interaction/participation (CNNIC, January 2010). The Internet has replaced television as the first main channel choice for obtaining information. More and more customers value Internet-based services in the fields of studying, working, daily life, and entertainment. Moreover, Chinese companies are hoping to lead the world in mobile commerce. Providing value-added data service via mobile phones is a growing sector (CNNIC, July 2006).

In recent years, the Internet applications of Chinese Internet users have been changing from entertainment to business. 2009 was the year of large-scale development for business applications. Based on the growth rate, business transaction applications, with an average annual growth of 68% in 2009, are the fastest growth area among the major Internet applications. Among them, online payment users increased 80.9% annually,

ranking first in all applications. Travel reservation, online stock trading, online banking and online shopping users increased by 77.9%, 67.0%, 62.3% and 45.9%, respectively. China's Internet application shows a trend of transformation to consumer business (CNNIC, January 2010).

However, behind the scenes of this thriving e-commerce development in China lays the increasing digital divide among economic and geographic regions and urban and rural areas. CNNIC (2010) study found that the development level of the Internet was positively correlated to the level of regional economic development, namely, the more developed in the regional economy, the more developed in its Internet (Shown in Table 2-1).

Table 2-1: Comparisons of eastern, central and western China in Internet development

Year:2008	Internet Penetration rate	GDP per capita
Eastern	40.0%	RMB 36,575
Northeast	29.1%	RMB 25,406
Central and western	22.2%	RMB 17,507
Western	21.5%	RMB 15,694

Source: CNNIC (2010)

All the case companies are located in Guangdong, Beijing, Shanghai and Shandong, in Eastern China. According to CNNIC (2010), in terms of the Internet penetration rate, Beijing, Shanghai, Guangdong, took the top three rankings with Shandong in10th place. The following key characteristics of Internet development in China have emerged in recent years.

As the proportion of users of over 30 years old increased significantly and the proportion of the group of monthly income over RMB￥2000 is increasing, Internet users in China become more mature and the foundation of Internet user consumption is getting more solid (CNNIC, 2010).

The main obstacles to online purchase over the years have been concerns over online security and lack of trust in the quality of products and after sales services. (CNNIC,

1997-2006)

The acceptance of internet games, online shopping, and online payment method has improved steadily over the years, and by 31 December 2008, the number of online shoppers had reached 74 million, at an annual growth rate of 60%. The development of online payment, which is closely related to online shopping, is growing very rapidly. The number of netizens using online payment had reached 52 million, at an annual growth rate of 57.6%. The rapid development of online payment has strongly promoted the development of online shopping (CNNIC, January 2009).

CNNIC's research indicates that the users of online games have grown tremendously since the year 2000. One third of game users (31.3%) began playing online games for the first time in 2000 (CNNIC, 2006). By 31 December 2007, 59.3% of Chinese netizens were playing Internet games, which was even higher than the e-mail application rate of 56.5%. Internet games users had reached 120 million. (CNNIC, 2008) In 2008, the size of network game users continued to maintain the momentum of growth, and the proportion of users increased to 62.8% in 2008, which reflected the rich contents and style of network game products (CNNIC, January 2009).

2.2.3 The digital divide between developed and developing countries

Communication infrastructure is only a small part of what is needed to successfully participate in the information revolution (Lane, 1997). E-business operation requires a set of structural pillars such as financial conditions (credit card and other forms of e-payment), a legal framework (e.g. consumer protection legislation, e-contracts); a fair, effective, and prompt judicial system, telecommunication networks and transportation networks (Markus and Soh, 2002).

Ferran and Salim (2006) argue that the real digital divide between developed and

developing countries lies in the pragmatic dimension of the Internet, which refer to making practical use of existing objects and processes. The pragmatic Internet requires a highly developed industrial and service infrastructure, which can be lacking in developing countries. For example, in the United States the payment of e-commerce transactions is supported by a sophisticated culture of credit card use, while in developing nations the culture has not suitably assimilated credit and credit cards (Dadashzadeh, 2002). The pragmatic Internet also requires trust between sellers and buyers.

Moreover, Ferran and Salim (2006) suggest that developing countries are not able to skip the industrialization phase and jump into the information era and the service economy to stand in the same ground as the developed nations. For example, some important management practices in information management such as automation implementation and informatisation implementation were adopted by developed countries before e-business adoption (Bellamy and Taylor, 1997). Developing countries have to approach automation, informatisation, and e-business at the same time. Hence, managers in developing countries lack management skills to manage e-business. In addition, developing countries lack the capabilities to develop localised e-business systems.

Okoli and Mbarika (2003) suggest that, to effectively implement e-business technologies in developing countries, the local context must be taken into consideration. Similarly, Haley (2002) argues that in emerging markets such as China there are considerable difficulties in implementing the standard US model. However, alternative models, that take consideration of local markets and local conditions, may be preferable.

2.3 Background information on the selected industries

In this research, nine case companies were chosen and grouped into three industries: the housing development industry, manufacturing industry, and B2C oriented industry.

These case companies are all leading players in their respective market segments. The cases cover most of the conceptual categories of e-business applications proposed in **Chapter Six** so that comparison among categories is possible. For example, the range of the cases covers both Internet pioneers who represent the wave of new business that have emerged with the growth of the Internet and Internet pragmatists, who have adopted the Internet in order to enhance existing products and processes. The case companies include e-business classification of B2C oriented and B2B oriented companies. The case companies' core products include digital products as well as physical products. A detailed explanation of the criteria of selecting case companies is given in **Section 6.2.1.**

B2C oriented industry was established with the growth of the Internet and its related technologies. The case companies regard themselves as 'e-business companies'. They are the leading players of the 'new economy'. They boldly imitate the practices of global leading players in e-business applications and adapt these applications to the Chinese context.

The manufacturing industry is one of China's pillar industries. In response to the challenges of increasingly intense competition in the industry and globalisation, technological innovation has become a key success method for the leading manufacturers. According to our interviewees, to survive in this industry, companies have to adopt e-business. Effective e-business applications have become a basic tool for leading players to achieve operational efficiency. Two of our case companies in this industry are held by the government to be national role models for e-business applications. E-business applications in this industry concentrate on B2B application

and improving the whole value chain management.

Compared with the B2C industry and manufacturing industry, e-business applications in the housing development industry are out of date and still in their early stages. Nonetheless, the senior managers from the leading companies point out that they are unable to ignore e-business because it is the future direction. They wish to understand e-business and to know the best ways of applying e-business to this traditional industry. They believe that e-business will promote the development of their companies. Thus, our case companies have kept on exploring e-business applications through a range of individual e-business projects.

The background information on these three industries is introduced as follows.

2.3.1 The Chinese housing development industry

Three of our case companies—China Vanke Co., Ltd (Vanke), Gemdale Corporation (Gemdale), Beijing Vantone New-conception Integrated Homes Co., Ltd (Vantone-Ehouse)—are located in the housing development industry.

In 1978, China started to modify the system of land allocation with the intention of transforming the system from central-state planning to market orientation. However, very little headway appeared to have been made during the period of 1978-87 (Walker and Mckinnell, 1995). From late 1987 to 1997, the Chinese real estate industry was an experiment in marketisation processes. From 1998 to the present, the real estate market has experienced fast development (Fung et al., 2010).

In 1997, the Chinese government named real estate as a driving force with which to support the country's continued economic growth. Following this, a series of government policies were introduced in the areas of housing reform, taxation, finance and land supply. They in turn created a more favourable operating environment for residential housing developers in the Mainland China (Hinton and Tao, 2006).

Under the new rules, China's housing market is displaying new characteristics:

The majority of house buyers are individuals accounting for nearly 94 percent of all buyers of new housing (ChinaOnline, 2002).

Both developers and consumers are becoming more mature. Due to the intensified competition, developers have had to continue improving the quality and the service of their products as buyers have become more rational.

Thus, this intensified rivalry appeared to erode industry profitability and weeded out the weaker firms, especially SMEs.

Non-standardized operations in the market have become reduced, leading to intensified competition and industry concentration.

Real estate developers show a need to have more capital than before to operate in the industry. For example, 40 to 50 percent of the total money needed for a development is required before launching, compared to less than 30 percent before the regulations introduced in 2004-2005. Therefore, it is felt that developers have a need to develop diversified funding channels, including banks, real estate funds, property trusts, corporate bonds and the stock market.

International property funds have launched investments in China's real estate industry. China's accession to the WTO in 2001 presented challenges to the Chinese domestic real estate firms as foreign products and services increasingly entered the China real estate market (Zhang et al., 2009).

In recent years, China's real estate market has demonstrated increasing integration with its counterparts in other countries. For instance, the real estate bubble between early 2003 and late 2007 coincided with many other markets (Fung et al., 2010).

The Chinese government has played an important role in the development of the real estate market. Unlike in many Western countries, China's land belongs to the government. Real estate developers and individuals can only have land-use rights, which are subject to a seventy-year term. Meanwhile, government policies have

profound influence on the performance of the market. Regulators find themselves in multiple positions, enjoying revenues from land sales and property taxes, but at the same time under great pressure to cool off the market when it is overheating and to revive the market when it is falling sharply (Rao and Zhou, 2010).

These new policies appear to offer better opportunities for regulated competition, but also intensify competition in the market making it more important than ever for the developers to gain sustainable competitive advantages. E-business applications may be a useful tool that allows a company to achieve this aim due to the potentially high information intensity in the industry value chain (Hinton and Tao, 2006). In particular, e-business may play an important role because of the following characteristics of Chinese real estate developers:

Real estate developers need to coordinate with various business partners. So far, the focus of most of the research concerning e-business applications in real estate industry has been concerned with the agents (Crowston and Wigand, 1999, Selen, 2001). But in Mainland China, the developers stand at the heart of the matter because most of the developers in Mainland China are involved in all the activities in the value chain. For example, from feasibility studies to project strategic management, design management, construction management, sales and marketing, and property management. Therefore, developers have to coordinate with diverse interests such as local government and public organizations, survey companies, design institutions, and construction companies, real estate buyers, property management companies etc. Furthermore, due to the weak development of agent services and other related infrastructure, if suitable co-operators are not available, developers will do most of the activities by themselves, such as sales and marketing.

Real estate developers are resource-intensive. They possess two types of major resources, namely land reserves and professional human resources (Zhang et al., 2009). On the one hand, land is the premise and primary condition of operating business for a

real estate developer (Liu, 2004). On the other hand, the complicated development process for real estate projects requires many types of professionals and technical personnel. These professionals' expertise crosses multi-disciplines, including the knowledge of obtaining land-use right, planning and design, project financing, project management and marketing management (Cong and Wang, 2004).

Real estate developers' business is subject to high risk but at the same time with expectations of high returns (Tay and Tay, 2007). Real estate projects usually involve a long term production process. This lengthy process presents various types of risks such as changes in governmental policies, changes in interest rates, and changes in market environment (van der Krabben and Lambooy, 1993).

Vanke, Gemdale, and Vantone-Ehouse are our case companies in the industry.

Vanke specialises in property development, specifically commodity housing. Its urban-oriented strategy focuses on the Pearl River Delta, Yangtze River Delta and Bohai Rim regions. Although Vanke is already a market leader in most major urban areas, the company is investigating prefabrication technology and other design initiatives to increase its competitiveness. At the end of 2008 the company's share in China's residential property market was 2.34% (BMI, 2010c).

Based in Shenzhen, Guangdong, Gemdale develops residential, commercial and industrial properties primarily in Shanghai, Beijing, Wuhan, Xi'an and Guangdong Province. On December 31 2007 the company had 24 major subsidiaries and two major associates (BMI, 2010c).

Vantone E-housing is the first experiment of a 'clicks-and-mortar' model in the Chinese real estate development industry. The company is a pioneer in the provision of customized products within the sector.

2.3.2 The Chinese manufacturing industry

Four of the case companies—Haier Group Corp (Haier), TCL International Electrical Corp (TCL Electrical), Founder Technology Group Corp (Founder), and Southern Telecommunication Equipment Corp (pseudonym) (STE)—are located in the manufacturing industry.

Manufacturing industry is China's pillar industry. According to the US-based consultancy IHS Global Insight, the manufacturing sector in China was close to bridging the gap with that of the US in 2009, with the value of goods produced by Chinese factories reaching $1.6 trillion, while those of the US' were valued at $1.72 trillion. China's manufacturing sector is estimated to have grown by 14 percent in "real" inflation-adjusted terms from 2007 to 2009, while the US witnessed a decline of 8.2 percent over that period (GlobalTimes, 2010). Continuous expansion in the industry can be attributed to a number of factors: soaring domestic demand, high amounts of overseas investment, low-cost advantage, and globalisation.

Despite this continuous expansion potential, the Chinese manufacturing industry encountered a number of challenges. The industry stayed in the low-end position in the international industrial supply chain, facing many pressures such as international trade frictions, rising wages of manufacturing workers, shortage of energy and raw materials, as well as a deteriorating environment. To address these challenges, the Chinese government issued six quality requirements in August 2007 and promoted the creation of a number of world-renowned brands.

IDC(China) (2008) predicts that the Chinese manufacturing sector is expected to apply more IT technology to complete the transition from product manufacturing to technology innovation. Manufacturing enterprises in China will invest more in purchasing software (e.g. in the areas of product life-cycle management (PLM), enterprise resource planning (ERP), computer-aided manufacturing (CAM)) to improve

quality control management and the efficiency of supply chain management. Moreover, Chinese manufacturing enterprises will invest in the improvement of their design ability in order to develop a technological edge and to change the conventional thinking that Made-in-China means low price and low quality.

In the mean time, the adoption of IT platforms like the Internet and business to business (B2B) are expected by Chinese enterprises, especially the numerous SMEs, in order to make information more transparent through the provision of information fully covering manufacturing, shipping, and delivery, so as to better control the quality of the products. Our case companies' (i.e. Haier, TCL Electrical, Founder, and STE) core businesses are in the consumer appliance, electrical appliance, personal computer, and networking hardware manufacturing respectively. More detailed background information on these segments appears as follows.

Chinese consumer electrical appliances sector

The market growth in this sector is beginning to diminish as markets become more mature. As a direct result, the competition has become more intense and the sales cost higher than before. Simultaneously, market concentration is taking place. For example, the number of brands of air conditioners has shrunk from 69 to 27 by 2005 (EI, 2006a). Meanwhile, consumers became more price-sensitive. In order to boost sales, the government, manufacturers and retailers made more effort to stimulate sales through various kinds of promotional activities, such as subsidies, discounts and free gifts (EI, 2010a).

The sector of high-end refrigerators and washing machines experienced robust growth in urban areas. More players are exploring the high end of the market and concentrating on developing premium products. This trend is in line with rising disposable incomes and increasing consumer sophistication.(EI, 2010a)

To meet the challenge of intense price competition, manufacturers have adopted

technological innovation as a key method of survival. Manufacturers have been seen to collaborate with business partners in order to seek economies of scale. These collaborations take the shape of alliances among manufacturers and close vertical relationships between manufacturers and retailers.

Another three factors noticeably began to reshape the structure of the sector: globalisation, the increasing bargaining power of retailers, and the increasing importance of Internet retailing.

As a result of globalisation and the attraction of low-cost manufacturing, it was hoped that more international players would introduce their production lines to China, especially for the manufacture of underdeveloped product types such as small electrical appliances (EI, 2006a). Currently, multinational brands dominate the high end of the market although domestic players such as Haier and GD Midea are actively expanding into the high-end (EI, 2010a).

In recent years, specialist chain stores have expanded rapidly with their advantages on quality guarantees. These include a high level of after-sales service, spacious outlets across China, complete product availability, and attractive prices. Specialist chain stores tend to purchase products directly from manufacturers via massive bulk orders, through which they can negotiate extensive price discounts (EI, 2006a).

Emerging channels such as Internet retailing and home-shopping have attracted high levels of interest. These channels are expected to take a bigger market share. Manufacturers will benefit from lower costs and more effective distribution of goods to a wider sales region.(EI, 2010a)

Haier, our case company, is a leading manufacturer of consumer appliances. The company's key focus is on developing high-end products which help to strengthen its brand image and stay ahead of the competition. Haier is expected to put more focus on brand building and product differentiation in order to not be dragged into the price war. Haier was the leading player in refrigeration appliances and home laundry

appliances in China in 2009, with volume shares of 34% and 33% respectively (EI, 2010b).

TCL Electrical, another case company, is a leading Chinese manufacturer of wiring devices. Its own brand 'TCL International Electrical' is a well-received high-end brand in Chinese domestic market.

Chinese PC sector

China has already become one of the most important global manufacturing sectors for PCs (BMI, 2010a). China's Tenth Five-year Plan (2001-2005) on computerization has accelerated the demand for PCs in the Banking, Securities, Telecom, Social Security, and Education sectors. In addition, SMEs and users in third-tier cities or below will continue to create such demands.

Despite the economic slowdown in 2008, there were some key PC market drivers: (1) the provision of 3G mobile services stimulated sales of netbooks; (2) the Government subsidy programmes which have been implemented since 2009 boosted demand from the vast, under-penetrated rural areas of China. Already the second biggest PC market in the world, relatively low PC penetration in smaller towns and rural areas ensures continued strong growth prospects going forward.(BMI, 2010a)

After years of growth, Chinese PC manufacturers have faced some of the same problems which occurred in the PC industry everywhere in the world. For example: slower growth, fierce price competition, and narrower profit margins. Intense competition is leading to aggressive price cuts. Market leaders Dell, HP and Lenovo are all following each other in cutting prices and expanding production (BMI, 2010a). New market players, improved technology, shorter product life cycles, and reduced prices have become the main factors driving the market (EI, 2004a).

Seeking the higher margins associated with IT services, an increasing number of local companies (e.g. Lenovo and Founder) are attempting the transition from equipment

manufacturers to professional service providers and increasing their investment in R&D intensity (BMI, 2010b, EI, 2009).

Founder, our case company, claims to be the second largest marker of PCs in China with a market share of 11.9% in 2004 (Founder, 2005). Founder's main domestic competitor is Lenovo.

The networking hardware sector

The market reached RMB17.1 billion (US$2.06 billion) in 2003. The acceleration of infrastructure construction on computerization and networking in the financial, insurance, telecom, and education sectors has created demand for networking hardware (EI, 2004b).

Another major growth opportunity comes from the small and medium enterprise (SME) sector. Servers and networking equipment will form the fastest growing elements of SME demand, with entry and mid-range servers showing the greatest potential (BMI, 2010a).

STE, our case company, is one of the leading suppliers of telecommunications equipment in China's telecommunications market and has also gained access to the global telecommunications market, especially in emerging markets.

2.3.3 The Chinese B2C industry

Two of our case companies—EGame (pseudonym) and Dangdang.com (Dangdang)—are located in the B2C industry. EGame and Dangdang.com operate in the online game segment and online retailing segment respectively.

Overall, the Chinese internet market has only just begun to develop. Different sectors of the internet market are now reaching a critical mass with regard to users. Despite the large number of Internet users in China, the number willing to pay for online services is

limited. As a result, some sectors of the Chinese internet market are maturing relatively quickly. For example, since the beginning of 2005, analysts have been forecasting a slowing down of revenue growth for China's online gaming market, which began booming in 2004. (InterfaxNewsAgency, 2005)

Security has remained the top concern in the sector. A special survey conducted by the State Economic and Trade Commission shows that nine factors appear to be hindering China's e-commerce development. These factors include: network safety, Internet infrastructure construction, social business credit problem, e-commerce related laws and regulations, standardization problems, online payment, the acceptance degree of e-commerce by enterprises, network market capacity, and lack of management talents. Among the nine factors, network safety was listed as the most important factor by the survey (ChinaInformationWeekly, 2005).

However, the acceptance of Internet games, online shopping, and online methods improved markedly in 2008 (CNNIC, January 2009). 2009 was the year of large-scale development for Internet business applications (CNNIC, January 2010).

The background of the online game and online retailing segments is given in the following.

Chinese online game sector

Online games in China are divided into three categories: Massively Multiplayer Online (MMO), casual games, and social networking games. MMO is the main source of revenues for leading gaming operators.

There are three major factors influencing the online game market: broadband penetration, customer service, and user-friendly payment systems. Technical and billing issues are important elements of customer service. The requirement of effective online payment solutions has created a market opportunity for micro and macro payment solution providers such as Paypal and Firstgate. Very specific regional user habits and

bank infrastructure variables are taken into account by those payment solution providers in order to provide a feasible alternative to credit card purchase. (IGDA, 2004b, IGDA, 2004a)

With the support from the Chinese government given to home-grown game developers, the Chinese online gaming market appears promising. This could be due to the popularity of Internet cafes and online game content, as well as the lack of penetration by console players.(IGDA, 2004b)

Already several players have taken a significant lead in the market: Shanda with leadership in the MMO and casual game market as well as the three top web portals Sohu, Sina and Netease (IGDA, 2004b). Tencent.com has quickly captured the top position in revenue since 2009. By 2010, its market share in China reached 29.1% (iResearch, 2011). Its success derives from its huge user base and the subscription revenue model for casual games (Su, 2011). Its integrated model with upgrades across online, mobile and offline provides significant advantage for customer acquisition, development and retention (Merel, 2011).

The following trends have emerged in the Chinese online game industry:

Basically mature, the market concentration keeps increasing. The top five operators—Shanda, Netease, the 9, Optisp, and Kingsoft—accounted for 51% of the total market in 2004, and took 67% of the total market in 2005 (iResearch, 2006b). In 2010, the top five operators—Tencent, Netease, Shanda, Perfect world, Sohu—accounted for 69.9% of the total market (iResearch, 2011).

In the interim, the market appears to be highly fragmented. Apart from the leaders, a huge number of companies are focusing on this market as a direct result of the high profit margins generated by the market leaders (Rashtchy et al., 2006). Ewing (2007) reports that the average gross profit margins for major online game titles are as high as 70-80 percent. However, tighter regulations, raising capital requirements, increasingly sophisticated technical requirements for gaming platforms and the heavy marketing

expenses needed to launch new games have forced many smaller firms out of the market (Su, 2011). This process should eventually benefit top gaming operators with a large player base, strong marketing capabilities and capital resources (Su, 2011).

After over ten years of rapid growth, the Chinese online game industry reached its peak value in 2007. Since 2003, the market has entered a period of rapid development. Between 2003 and 2008, the market expanded at an annual average rate of 60.9% (iResearch, 2009). The growth of the market has been slowed down since 2008, with an annual growth rate of 30.2% and 21% in 2009 and 2010 respectively (iResearch, 2011, iResearch, 2009). In 2010 China's online gaming market volume reached RMB 32.7 billion (approximately $5 billion) (iResearch, 2011).

According to iResearch (2009), in 2008, China's online game market accounted 27.1% of global market and ranked the second with America ranked the first and Korea the third. Comparing with America and Korea, China mainly depended on domestic operation, while America mainly exported games and Korea depended on both exporting and domestic operation. Since 2006, Chinese online game operators started to export their games. By 2009, the sales revenue of export reached RMB 0.83 billion (iResearch, 2011).

The industry had experienced a slowdown in the growth of revenues during the third quarter of 2005, with most of the major gaming firms falling short of revenue expectations. One of the main reasons behind this was a lack of new games in the market due to a lack of skilled Chinese game developers. In response, Chinese online game firms started to explore innovative new revenue models: introducing free-to-play and pay-to-buy-item model, extending user base from young males to more diverse players, improving customer services via interactive interface, improving R&D capability, and flattening sales channels. Some of these methods had created positive effects, with the annual market growth rate over 50% between 2006 and 2008 (iResearch, 2011).

However, in 2010, online gaming players encountered serious challenges derived from the lack of innovation in revenue models, products, and marketing and promotions (iResearch, 2011).

Developing new online and offline delivery and distribution channels has become a key factor in operation success. In recent years, the share of online game distributors among the market size of the industry has declined due to major online game operators' success in streamlining channels. In 2003, distributor revenue accounted for 29% in the industry's market size, dropping to 23% in 2005 (iResearch, 2006b).

Chinese online game operators need to develop new effective delivery and payment approaches. A simple and safe payment solution is a key success factor.

The Chinese government is pushing for more games to be produced inside China with storylines and themes that are China-centric. The Chinese government provides support to the industry through funding research projects, providing funding to establish training institutes for online game developers, as well as preferential tax policies for domestic online game companies (Rashtchy et al., 2006). To lower costs and tailor games to the Chinese market, more than 100 video game development centres have established. One of the most important studios is France-based Ubisoft Entertainment SA's Shanghai operation with about 500 experienced developers (Ewing, 2007).

As China emerges as a pivotal market in the global online games industry, globalisation has become a centre theme in the market. International games companies, such as Sony and Electronic Arts (EA), are competing in the Chinese online gaming market by means of localizing their products and cooperating with local partners. For example, in 2007 EA announced a US$167million strategic investment in The9 Limited that allowed the Chinese company to become a portal for many of EA's global titles (Ewing, 2007). Meanwhile, the Walt Disney Internet Group partnered with Shanda in May 2006 to develop new web-based games that include Disney characters (Ewing, 2007).

Another key factor that shapes the industry is the Chinese government intervention. For

example, the government has focused on limiting the duration of game play in response to reports of online game addition. Companies must now include 'fatigue' controls in their games to halt game play after several hours (Ewing, 2007).

The prevailing revenue model for online gaming in China is the free-to-play and pay-to-buy-item model, which allows gamers to play for free but charges for the purchase of in-game virtual goods that would enhance the gaming experience. Widely used by MMO providers since 2005 to lower the hurdle for new gamers, the item-based model actually has helped leading firms such as Shanda generate excellent operating margins of at least 30% in their online gaming businesses (Su, 2011).

EGame, our case company, is a leading online game operator in China. Its core products are online games and interactive entertainment products.

Chinese internet retailing sector

The year 1999 appears to have been the starting point of China's online retailing, which has become one of the major hot points of the Internet economy and attracted large amount of funds. However, in the second half of 2000, online retailing experienced a stagnant period. Many shopping websites were shaken out of the market. Since 2002, the sector has entered a more practical stage. Shopping websites actively optimized their profit models and established pragmatic strategies, consequently, attracting investors. From 2004, both the number and the size of B2C websites entered a high-speed expansion period (iResearch, 2006a). Online shopping is becoming more prevalent in large cities such as Beijing, Shanghai and Guangzhou.

Nonetheless, Internet retailing in China is still in its infancy. Sales had only reached around RMB¥ 4 billion by 2005 (EI, 2006b).

Nevertheless, Internet retailing is experiencing strong growth in the recent years and is expected to continue this trend over the period between 2009 and 2014 (EI, 2010c). During the economic downturn in 2008, consumers are likely to choose cheaper

alternative channels such as Internet retailing for branded items, while for manufacturers and/or store-based retailers, Internet retailing could help them to save costs as well as tapping into fashionable online shopping consumers (EI, 2010c).

Internet retailing will become an increasingly important channel for many traditional players, among which, many manufacturers are expected to use Internet retailing, either through opening B2C portals by themselves or cooperating with third-party operators (EI, 2010c).

There are five major types of B2C players in terms of their range of offerings, namely, clothing and footwear, consumer electronics, domestic electrical appliances, media products and "baby and mom" related products. For example, Dell, 360buy, 139shop and Newegg are well-known brand names among Internet shoppers in domestic electrical appliances and consumer electronics, Dangdang and Joyo are famous for selling media-related products, Redbaby is specially for 'baby and mom' related consumer products, Vancl, 3 Suisses, eBONO and M18 are primarily engaged in clothing and footwear Internet distribution (EI, 2010c).

The major competition to internet retailers is traditional shopping malls, supermarkets and sales agencies. To gain market shares, internet retailers have adopted low-price strategies. For example, Dangdang launched its price comparison system and declared a 10% discount on all products. In response, Joyo.com immediately introduced discounts on most of its products. However, low price strategy eroded profit margins in this sector.(EI, 2006b)

An economy of scale is a key success factor for online retailers. Both Dangdang.com and Joyo.com have attempted to achieve this by ways of owning large warehouses and large call centres, and through heavy spending on marketing promotions.

Logistics will be a potential constraint on Internet retailing growth. Currently, the majority of Internet retailing players relies on third-party logistics to deliver their goods. With regards to the fragmented logistics market, many of the smaller logistics players

have little expertise, which greatly reduces consumer satisfaction levels.(EI, 2010c)

As one of the top five players in the Chinese Internet retailing sector, Dangdang, our case company, is the number one player in online B2C bookselling. However, Dangdang's profit margin is relatively low compared with other online shopping retailers providing large commodities. To overcome this, the company actually tried to diversify its product portfolio, bringing 'online department store concepts' to improve its competitive edge (EI, 2010c).

CHAPTER 3 LITERATURE REVIEW: E-BUSINESS

Chapter 3, 4, and 5 will take a critical review of the existing literature that relates to e-business and e-business enabled competitive advantage. The central aim is to identify key constructs of the theories and frameworks for investigating e-business' impact on sources of competitive advantage. As a consequence, the research gaps can be identified and the research questions will be formulated.

Chapter 3 firstly explores the definition e-business. Secondly, in order to better understand e-business, the relationship between e-business and IT and the key features of IT will be examined. Thirdly, the key features of e-business are discussed. Finally, this chapter provides the key theoretical frameworks for investigating value creation of e-business: the value chain framework and the resource-based view.

Chapter 4 reviews the value chain framework—one of the key theoretical approaches adopted by the research—and the transformation to the framework. It situates the framework in a broader theoretical context. Chapter 5 explores theoretical and empirical research to-date on the value creation of e-business.

3.1 Overview of E-business

3.1.1 The definition of E-commerce

Electronic commerce is the subject of numerous definitions. Wigand (1997, p.5) gives a general definition of e-commerce as "... the seamless application of information and communication technology (ICT) from its point of origin to its endpoint along the entire value chain of business processes conducted electronically and designed to enable the accomplishment of a business goal. These processes may be partial or complete and may encompass business to business as well as business to consumer and consumer to business transactions".

Whiteley (2000) argues that this definition is possibly a bit all embracing because it is tempted to regard the Electronic Data Processing era as an e-commerce system with 'partial' e-commerce processing.

From the transaction perspective, Whiteley (2000) proposes a definition of e-commerce as "formulating commercial transactions at a site remote from the trading partner and then using electronic communications to execute that transaction".

From an information system's point of view, Laundon and Laundon (2002) define e-commerce as "the process of buying and selling goods and services electronically with computerized business transactions using the Internet, networks, and other digital technologies. It also encompasses activities supporting those market transactions, such as advertising, marketing, customer support, delivery, and payment". This definition extends the definition of e-commerce to include activities of the transaction-based as well as the support-based.

A well-accepted e-commerce definition is given by Zwass (1996): "the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunication networks." This definition explicitly emphasizes e-commerce's advantage on information sharing, and consequently business relationship maintaining.

Some authors see e-commerce as largely or entirely an Internet phenomenon. For example, Schneider and Perry (2000) define e-commerce as "business activities conducted using e-data transmission via the Internet and World Wide Web". Whiteley (2000) asserts that 'e-commerce' is the term popularized by the advent of commercial services on the Internet; Laudon and Laudon (2002) contend that the Internet is emerging as the primary technology platform for e-commerce, because it offers businesses an easier way to link with other businesses and individuals at a very low cost; and Wigand (1997) contends that the Internet phenomenon is a paradigm shift governing both business and IT systems.

E-commerce and E-business

According to Turban et al. (2000), the term 'commerce' is viewed by some as transactions conducted between business partners. Therefore, the term 'e-commerce' seems to be fairly narrow to some people. Many use the term 'e-business' to refer to a broader definition of 'e-commerce', not just buying and selling but also servicing customers and collaborating with business partners, and conducting electronic transactions within an organization. In this research, we use the term 'e-business' to refer to a broader definition of e-commerce, which includes several core categories as defined by Zwass (2003,p.8): "the interorganizational processes of market-based sell-buy relationships and collaboration (known as business-to-business, i.e. B2B commerce) and consumer-oriented activities (business-to-consumer, i.e. B2C and consumer-to-consumer, i.e. C2C), as well as the intraorganizational processes that support them."

3.1.2 E-business and information technology (IT)

Revolution or evolution?

Coltman et al. (2000) suggest that it is important to clarify whether e-business represents a revolution or a more normal evolution because if the change is revolutionary, firm strategies and managerial responses are required to be re-considered in a profound way. But if the change is evolutionary which means that pre-Internet strategies and managerial responses will still be appropriate in many circumstances. They suggest that it is premature to categorize e-business as revolutionary.

The assumption that the fundamentals of economics and strategy have not changed and the Internet is the latest stage in the ongoing evolution of IT is well accepted by some researchers (e.g. Rangan and Adner, 2001, Coltman et al., 2000, Porter, 2001). However, there is counter stance which claim that the old rules of business will not apply (e.g. Booz Allen and Hamilton, 1999, Cross, 2000).

This research will accept the evolutionary view of e-business tentatively, and then use empirical research to justify this assumption, and moreover, to figure out which previous theories are most related and what kind of adjustments are needed to make them more appropriate for e-business research.

The key features of information technology

According to Porter and Millar (1985), information technology (IT) must be conceived of as the information that businesses create and use as well as a wide spectrum of increasingly convergent and linked technologies that process the information.

Zuboff (1988) states that, compared with earlier generations of machine technology, IT is characterized by a fundamental duality: informate and automate. IT not only produces action but also generates information about the underlying productive and administrative processes. IT provides a deeper level of transparency to activities that had been either partial or completely opaque. IT can provide substitutes for the human body that reach a greater degree of certainty and precision.

Henderson and Venkatraman (1994, pp.202-03) suggest three major roles for IT:

1) Administration, which includes automating and streamlining accounting and control activities. This role requires the deployment of an efficient IT platform for administration and control and is independent of the organization's strategic management. The framework to analyse this role is critical success factors.
2) Operations, which is an extension of the first role. It refers to the capabilities of automating the entire set of business processes, as opposed to only the administrative activities. This role requires the deployment of an IT infrastructure that responds to and supports the chosen business strategy (King, 1978). The frameworks to analyse this role are business system planning and the value chain analysis.
3) Competition, which refers to using IT to obtain competitive advantage in the

marketplace, i.e. influencing market structure and shaping the basis of competition.

Base on the discussion with Peter Bligh, Porter (2001, pp.74-75) contends that the evolution of IT in business can be categorized into five overlapping stages; and the Internet is the latest stage in the ongoing evolution of IT:

1) The automation of discrete transactions such as order entry and accounting.
2) The fuller automation and functional enhancement of individual activities such as human resource management, sales force operations, and product design.
3) Being accelerated by the Internet, the third stage involves cross-activity integration, such as linking sales activities with order processing. Multiple activities are being linked together through such tools as customer relationship management (CRM), supply chain management (SCM), and enterprise resource planning (ERP) systems.
4) The integration of the value chain and entire value system. SCM and CRM are starting to merge as end-to-end applications involving customers, channels, and suppliers link orders to manufacturing, procurement, service delivery, and even further product development.
5) Using IT to connect the various activities and players in the value system as well as to optimize its working in real time.

3.1.3 The distinct features of e-business

The categorization of e-business activities

Based on the aspect-and-opportunities framework, Zwass (2003) categorizes e-business activities into five domains: commerce, collaboration, communication, connection, and computation (**Table 3-1**). These aspects lead to innovative opportunities that can be exploited to organize and address marketplaces, offer innovative products, collaborate with business partners, transform business processes, and organize the delivery of information-system services.

Table 3-1: The categorization of e-business activities

Activity domain	E-business aspect of Web-internet compound	Key innovative opportunities	Value drivers
Commerce	Marketplace.	Flexible pricing; Multi-channel retailing.	Cost savings; Cross-&up-sell across channels; Cost-effective mass customization; Globalisation.
	Universal supply-chain linkage.	Web-based linkage of business processes; Disintermediation; E-reintermediation.	Cost-effective inter-company coordination; Restructuring distribution channels; Process innovation.
Collaboration	Network of relationships.	Web-supported long-term relationships; E-CRM.	Building trust, reputation and brand loyalty; Economies of scale and scope; Speed/quick time-to-market.
	Collaboratories.	Agile corporations.	Collaboration of knowledge workers; Collaborative development of products.
Communication	Forums & virtual communities; A KM and marketing tool and a delivery vehicle for digital products.	Accessibility & interactivity.	Customer-led innovation and customer loyalty; Improving organisational learning; A key part of image building & branding.
Connection	Cost-effective connectivity; A universal development platform.	Mobile commerce; Application integration & software reuse; Gaining global access.	Autonomous operation; Improving the effectiveness and efficiency of organizational information systems.
Computation	Computing utility.	Grid computing.	Supporting to E-CRM and E-SCM.

Zwass (2003) contends that innovation stems from creatively combining these five aspects of e-business activities. Moreover, he suggests investigating other important issues (e.g. organisational culture, structure, and learning) that condition the organisational deployment of innovation opportunities.

The distinct features of Web-Internet technologies

Drawing on the work of Madeja and Schoder (2004), Zwass (2003) and Evan and Wurster (2000), we conclude following distinct features of Web-Internet technologies—accessibility, interactivity, immediacy, connectivity, and information richness and reach, individualization and customization:

Accessibility. The ubiquitous and commonly accessibility of the Web enables the

creation of e-forums and virtual communities (Zwass, 2003). Moreover, the accessibility feature of the Web facilitates the Web as a cost-effective medium of marketing and delivery vehicle for digital products (see Table 3-1).

Interactivity. It enables customers to communicate with a company or organization which is operating a web site by offering them a feedback channel. Such feedback channels can be implemented via email or video conferencing via the Internet. The combination of accessibility and interactivity in exploiting e-forums and virtual communities can contribute to customer-led innovation, customer loyalty, and organisational learning (see Table 3-1). For the customers, the interactive spaces can offer information about products and services, which may be invaluable for their purchase decisions. For the companies, virtual communities constitute a low-cost channel for providing product support and obtaining customer feedback. To conclude, virtual communities can increase the value of companies' products and services at practically zero extra-cost. Yet they can also contribute to reducing the possible information asymmetry between companies and their customers, thus strengthening the position of the customer.

Immediacy. The opportunity to transmit and receive content as well as to update and react to new content without any significant delay. To match customers' expectations with respect to the immediacy of the Web site content, companies should update their Web site accordingly.

Connectivity. "The spread of Internet-centric applications has created a universal development platform for organisational systems. (Zwass, 2003, p.27)" Enterprise-level systems like ERP or CRM can be exploited within a firm and with the expectation that they will be able to interact with the systems of the firm's business partners. Also, Internet connectivity enables rapid and cost-effective deployment of networks that gain global access. (See Table 3-1)

Information richness and reach. Internet has reached a very high degree of availability

and the opportunity to link different types of information. Companies can present content in different depth and style, depending upon the target group and the featured information.(Evans and Wurster, 2000)

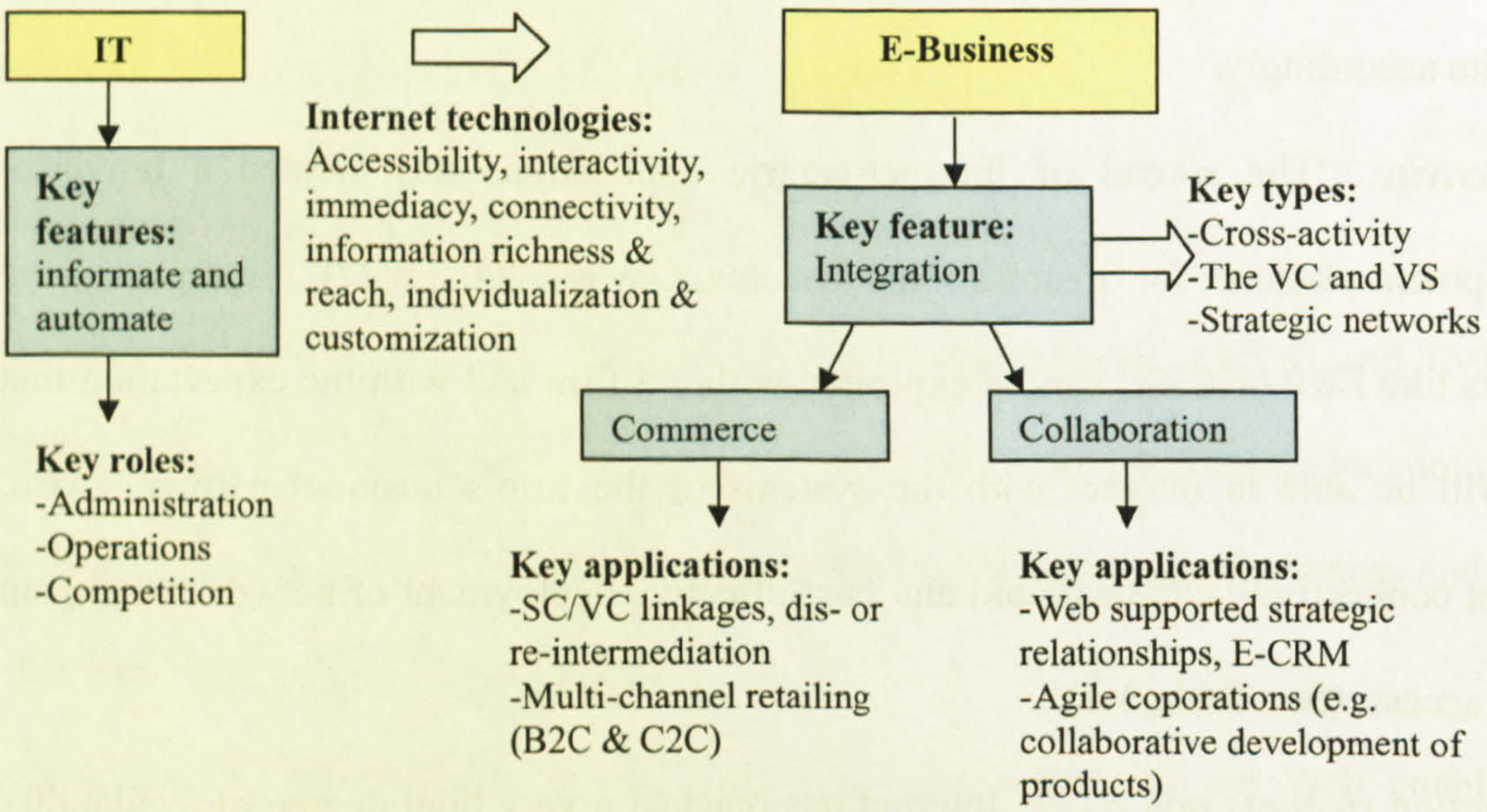
Individualization and customization. The opportunity to compose individual information or content according to individual preferences or user profiles. For instance the applications of E-CRM or one-to-one-marketing.

In summary, by using pre-Internet information technologies, it was difficult or costly for a firm to connect to its customers, suppliers, and business partners. In contrast, the Internet enables a two-way, real-time information exchange between a firm and its customers and business partners (Zhu and Kraemer, 2002, Straub et al., 2002).

The distinct features of e-business

Comparing the key characteristics of IT and e-business, we can conclude that the key improvement of e-business (Internet-based technologies) is its capability of integration which includes cross-activity integration, the value chain and/or value system integration and strategic network integration. **Figure 3-1** illustrates e-business' feature of integration which summarises the aforementioned literature.

Figure 3-1: The distinct feature of e-business and the relevant key e-business activities



3.2 Investigating IT and E-business' impact on sources of competitive advantage

In this section, two key theoretical perspectives of investigating e-business enabled competitive advantage are reviewed. Section 3.2.1 reviews Porter's value chain. Based on activity-based view, Porter's value chain is an important concept for exploring e-business' strategic role for building competitive advantage. Section 3.2.2 explores resource-based view. The resource based view is well accepted by IS researchers to identify and define IS resources and IT capabilities and their roles in generating sustainable competitive advantage. Section 3.2.3 identifies two key organizational innovations brought by e-business: strategic networking and dis- and/or re-intermediation.

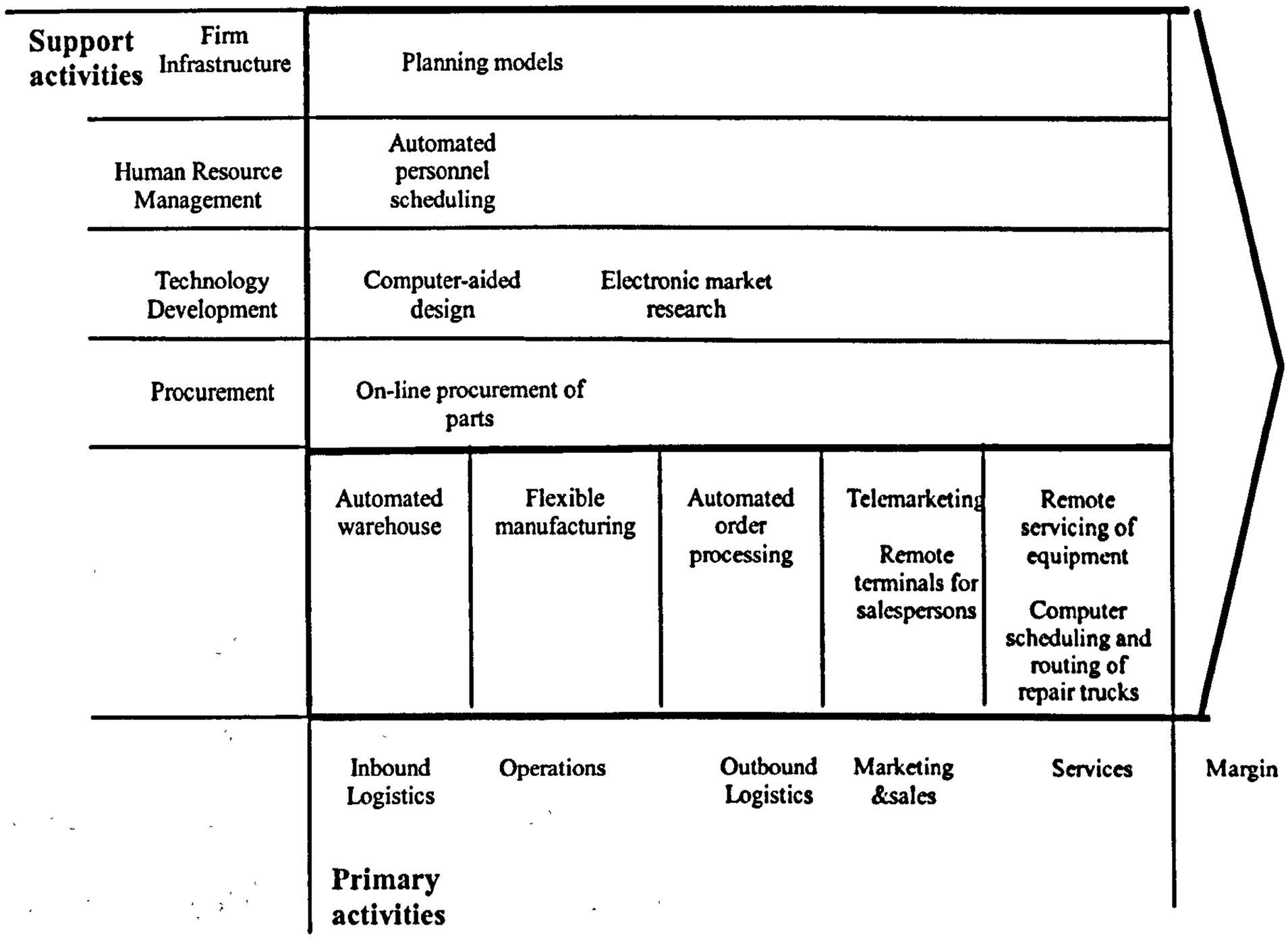
3.2.1 Porter's value chain framework

Porter and Millar (1985) contend that an important concept that highlights the role of IT in competition is the 'value chain' (a detailed description of the value chain framework is given in **Section 4.1** and **section 4.2** will put Porter's value chain model into a broader context). They suggest that IT is permeating the value chain at every point, transforming the way value activities are performed and the nature of the linkages among them. IT also is affecting competitive scope and reshaping the way products meet buyer needs. Thus, IT has acquired strategic significance.

Porter and Millar (1985) suggest that every value activity has both a physical component, referred to all the physical tasks required to perform the activity, and an information-processing component, referred to the steps required to capture, manipulate, and channel the data necessary to perform the activity. They suggest that there is unmistakable trend toward expanding the information content in products. IT is

generating more data as a company performs its activities. Meanwhile it is transforming the physical processing component of activities. They contend that the information revolution affects all nine categories of value activity (shown in **Figure 3-2**).

Figure 3-2: Information technology permeates the value chain



Source: Porter and Millar (1985, p.153)

Based on the value chain framework, Porter and Millar (1985, p.150) identify three specific ways that IT affects competition:

- It changes industry structure and, in so doing, alters the rules of competition.
- It creates competitive advantage by giving companies new ways to outperform their rivals.
- It spawns whole new businesses, often from within a company's existing operations.

Changing industry structure

The structure of an industry can be embodied in five competitive forces that collectively determine industry profitability: the power of buyers, the power of suppliers, the threat of new entrants, the threat of substitute products, and the rivalry among existing competitors (Porter, 1985). IT has had a particular strong impact on bargaining relationships between suppliers and buyers since it affects the linkages between companies and their suppliers, channels, and buyers (Porter and Millar, 1985). In some cases, the boundaries of industry themselves have changed (Cash Jr and Konsynski, 1985).

Creating competitive advantage

Porter and Millar (1985) argue that IT has a powerful effect on competitive advantage in either cost or differentiation.

1. Lowering cost: IT can either play a direct role in cost or alter the cost drivers of activities.
2. Enhancing differentiation: IT makes it possible to customize products. By bundling more information with the physical product package sold to buyers, the new technology affects a company's ability to differentiate itself.
3. Changing competitive scope: IT increases a company's ability to coordinate its activities regionally, nationally, and globally. Also, IT is creating interrelationships among industries that were previously separate.

Piccoli and Ives (2005) suggest that since the early 1980s, considerable research attention has focused on the strategic role of IT and its potential for creating competitive advantage. From this work has emerged the widely accepted conclusion that IT can be used to create competitive advantage through efficiency improvements, differentiation, and channel domination (Sethi and King, 1994).

Spawning new business

Porter and Millar (1985) suggest that the information revolution is giving birth to completely new industries in three distinct ways:

1) IT makes new businesses technologically feasible.

2) IT can also spawn new businesses by creating derived demand for new products.

3) IT creates new businesses within old ones.

Moreover, companies are increasingly able to create and sell to others information that is a by-product of their operations.

E-business' impact on competitive advantage

Porter (2001) argues that companies have to deploy Internet technology if they want to stay competitive and they have to find out the way of deploying it. To explore how to use the Internet to gain competitive advantage, Porter (2001) suggests investigating two fundamental factors that determine profitability:

- Industry structure, which determines the profitability of the average competitor; and
- Sustainable competitive advantages, which allows a company to outperform the average competitor.

Additionally, he suggests that potential profitability can be understood only by looking at individual industries and individual companies.

He suggests that the value chain framework and five forces framework are still valid tools for investigating the Internet's impact on firms and an industry respectively.

Cost and price advantages can be achieved in two ways. One is operational effectiveness. The other is strategic positioning. The Internet makes it harder for companies to sustain operational advantages, but it opens new opportunities for achieving or strengthening a distinctive strategic positioning (Porter, 2001).

The Internet is a very powerful tool for enhancing operational effectiveness. But the

improvement does not provide a competitive advantage because the best practices can quickly be copied by rivals. Consequently, nearly every company is developing similar types of Internet applications, often drawing on generic packages offered by third-party developers. The resulting improvements in operational effectiveness will be broadly shared. Thus, very rarely will individual companies be able to gain durable advantages from the deployment of 'best-of-breed' applications. (Porter, 2001)

But, the Internet provides a better technological platform than previous generation of IT when it comes to reinforcing a distinctive strategy, tailoring activities, and enhancing fit. This is because it is much easier to customize packaged Internet applications to a company's unique strategic positioning. (Porter, 2001)

Although the Internet has created some new industries, Porter (2001) argues that the Internet's greatest impact has been to enable the reconfiguration of existing industries that had been constrained by high costs for communicating, gathering information, or accomplishing transactions. Despite the distinct difference in the impact of the Internet on long-term industry profitability across individual industries, some common trends reveal. Dis-intermediation, industry efficiency, and expansion in the market size are some of the positive trends. But, at the same time, the deployment of Internet technology will likely continue to put pressure in the profitability of many industries. With a combination of new and old companies and generally lower entry barriers, most industries will likely end up with a net increase in the number of competitors and fiercer rivalry than before. The power of customers will also tend to rise. In general, Internet technology will continue to erode profitability by shifting power to customers.

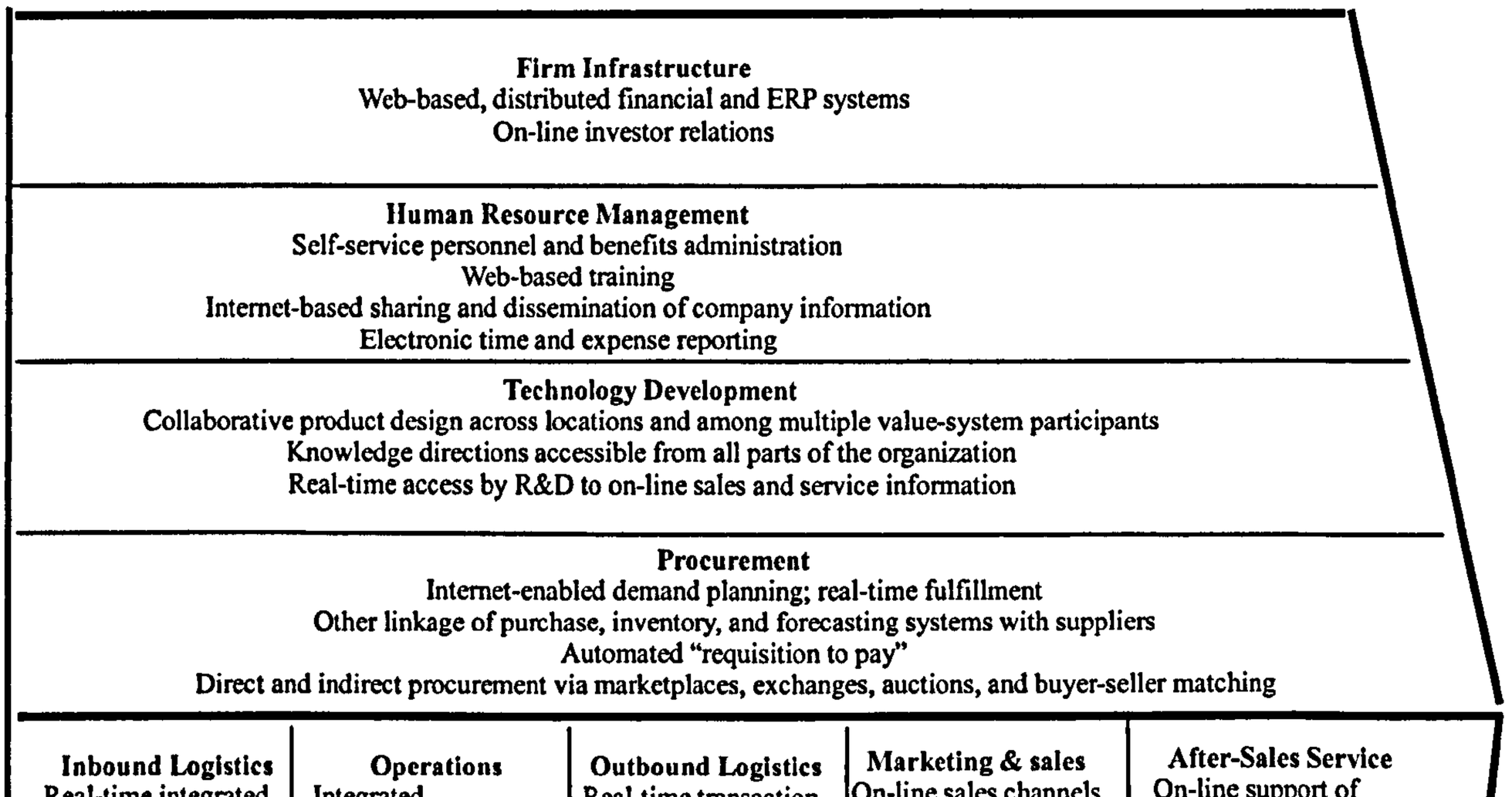
The Internet and strategic positioning

Porter (2001) suggests that companies need to tailor their deployment of Internet technology to their particular strategies. Strategy involves the configuration of a tailored value chain that enable a company to offer unique value. Moreover, the value chain

must be highly integrated. Internet technology makes it possible to build truly integrated and customised systems that reinforce the fit among activities. When a company's activities fit together as a self-reinforcing system, its competitors have difficulty in imitating the strategy because they must replicate the whole system rather than copy just one or two discrete product features or ways of performing particular activities.

According to Porter (2001), by easing and speeding the exchange of real-time information, the Internet enables improvement throughout the entire value chain. Many of the most prominent applications of the Internet in the value chain are shown in **Figure 3-3**. Some involve moving physical activity on-line, while others involve making physical activities more cost effective.

Figure 3-3: Prominent applications of the Internet in the value chain



Source: Porter (2001, p.75)

Porter (2001) suggests that dot-coms and established companies are facing different strategic imperatives. While dot-coms must develop real strategies that create economic value, established companies should use the Internet to enhance the distinctiveness of their strategies.

To be competitive, dot-coms will often need to widen their value chains to encompass other activities besides those conducted over the Internet and to develop other assets, including the physic ones. They need to create strategies that involve new, hybrid value chains, bringing together virtual and physical activities in unique configurations. Another strategy for dot-coms is to seek out trade-offs, concerning exclusively on segments where an Internet-only model offers real advantages.

Established companies also need to deploy the Internet strategically. They need an aggressive program to deploy the Internet throughout the value chain, using the technology to reinforce traditional competitive advantages and complement existing ways of competing.

Porter (2001) argues that the most successful established companies will be those that use Internet technology to make traditional activities better and those that find and implement new combinations of virtual and physical activities that were not previously possible.

Deconstructing an integrated value chain

Evans and Wurster (1997) contend that information plays a vital role in businesses today because it: (1) represents a large percentage of the cost structure in many industries; (2) is the glue that holds together the structure of all businesses (i.e. the value activities performed in a firm's value chain and value system); (3) forms the basis for competitive advantage. For example, Evans and Wurster (1999) argue that in most consumer businesses, navigation is an important driver of competitive advantage.

Navigation has three dimensions:

- *Reach* is about how many customers a business can access or how many products it can offer. Unconstrained by physical limitations, *reach* explodes.
- *Affiliation* is about whose interests the business represents. E-businesses are already titling their affiliation away from suppliers toward the consumer.
- *Richness* is the depth and detail of the information that the business gives customers or collects about customers. *Richness* holds enormous potential for building close relationship with customers in a future dominated by e-business.

Evans and Wurster (1999) argue that as aspects of navigation are themselves becoming business, enormous challenges arise to established companies. Companies have to deconstruct their value chain to seize the opportunity. Deconstructing a vertically integrated value chain alters the sources of competitive advantage. They expect that, accompanying by the Internet, every industry will shift at different speeds and with varying intensity. They suggest that "existing value chains will fragment into multiple businesses, each of which will have its own sources of competitive advantage (Evans and Wurster, 1997, p.79)".

3.2.2 The resource-based view

The resource-based view (RBV) is increasingly being used by IS researchers to investigate how information systems relate to firm strategy and performance (Wade and Hulland, 2004). The resource-based view (RBV) provides a valuable way for IS researcher to explain how firms can create competitive value from IT resources (Zhu and Kraemer, 2002, Wade and Hulland, 2004). By adopting a RBV, much work has attempted to identify and define IS resource(s). For example, Ross et al., (1996) argue that firms need to develop effective IT capabilities to generate sustainable competitive advantage through IT. This capability derives from the management of three key IT

assets: (1) a highly competent IT human resource, (2) a reusable technology base, and (3) a strong partnering relationship between IT and business management.

The RBV provides a theoretical basis for linking e-business use and e-business value creation (Zhu and Kraemer, 2002, Zhu and Wang, 2005, Zhao et al., 2008). By adopting RBV, certain IT and IT-related resources are treated as rare and valuable (Barua et al., 2004).

At the same time, Wade and Hulland (2004) suggest that RBV needs to be refined to address the role of resource complementary when it is adopted in IS research. This is because IS resources rarely contribute a direct influence to sustainable competitive advantage. Instead, they are necessary, but not sufficient, for sustainable competitive advantage (Clemons and Row, 1991). "The basic logic is that IT affects other resources or processes which, in turn, lead to competitive advantage. (Wade and Hulland, 2004, p.129)"

By reviewing RBV research conducted up until 2004 within the IS field, Wade and Hulland (2004) concluded that IS resources can be divided broadly into two categories—IS assets and IS capabilities. While IS assets represent the most fragile sources of sustainable competitive advantage for a firm, a firm's superior deployment of IS capabilities and intangible assets contribute significantly to competitive advantage. This is because IS assets are easy for competitors to copy. In contrast, IS capabilities may be developed over an extended period of time that become embedded in a company and are difficult to trade. They also argue that there is a distinct difference between resource creation and sustainability. Some research suggests that in many industries long-run equilibrium simply does not exist (e.g. Barney, 2001). Although many studies have examined how IS resources can potentially create competitive advantage for firms, very little of this work has looked at sustaining that advantage over time.

3.2.3 Informating capability and networked organisation

Zuboff (1988) suggests that managers should exploit the emergent informating capacity and explore the organizational innovations required to sustain and develop it. Meanwhile, some researchers (e.g. Allen and Scott Morton, 1994, Jonscher, 1994) have observed that using IT to restructure enterprises, which is taking place between as well as within organizations, is the most recurrent theme when investigating the impact of IT on management. This restructure will lead to changes in organizational forms. For example, a new organizational form is enabled by IT—the flexible corporation or networked organization (Piore, 1994). Basic structures are changing with the introduction of multiple lines of reporting, team management, parallel decision making, the integration of suppliers and vendors, and attempts to reduce in-process inventory and to introduce new forms of industrial relations. IT is necessary to the new industrial relations.

Strategic networking

Driven by IT's capability to produce cheaper unit costs for coordination, the firms are implementing new links for relating to each other. Thus, the boundaries of firms are increasingly blurred (Wigand, 1997). Consequently, a distinct organisational form emerges—strategic networks. Wigand (1997, p.12) define strategic networks as "the long-range, deliberate, cooperative, and goal-oriented organizational forms among distinct but related organizations that enable such network member organizations to gain or sustain competitive advantage vis-à-vis their competitors outside the network, by optimizing transaction costs and minimizing coordination costs". Wigand (1997) suggests that trust is an essential element of strategic networks that developed often prior to the formation of such networks and must be viewed as an important mechanism lowering transaction and coordination costs.

Dis-intermediation and re-intermediation

Facilitated by IT's low cost of connecting sellers with buyers, the mediating roles of wholesales, retailers, agents, distributors, etc. have been replaced or eliminated. This development has been labelled 'dis-intermediation' (Wigand, 1997). The previous intermediary roles between manufacturer and buyer/consumer may be replaced by an electronic market maker or by value networks, which, in turn, enable a 're-intermediation'.

3.3 Summary of the chapter

The definition of e-business given by Zwass (1996) is adopted which explicitly emphasizes e-commerce's advantage in information sharing, and consequently business relationship maintaining. Based on this definition, Zwass (2003) groups e-business activities into three core categories: interorganizational processes of market-based sell-buy relationships and collaboration (B2B); consumer-oriented activities (B2C and C2C); the intraorganizational processes that support aforementioned two categories of activities.

The view that e-business is the latest stage in the ongoing evolution of IT is accepted by the researchers which means that pre-Internet strategies managerial responses will still be appropriate in many circumstances. The key issue is to identify which accepted theories are most relevant in e-business context.

IT features as a fundamental duality: informate and automate (Zuboff, 1988) and has three key roles (Henderson and Venkatraman, 1994): administration (automate and streamline accounting and control activities); operations (automate business processes); competition (obtain competitive advantage in the marketplace).

Zwass (2003) categorizes e-business into five domains: commerce, collaboration, communications, connection, and computation. These aspects offer opportunities to exploit value drivers such as cost savings, economies of scale and scope, quick time-to-market, brand loyalty, collaboration, and effective IT capabilities.

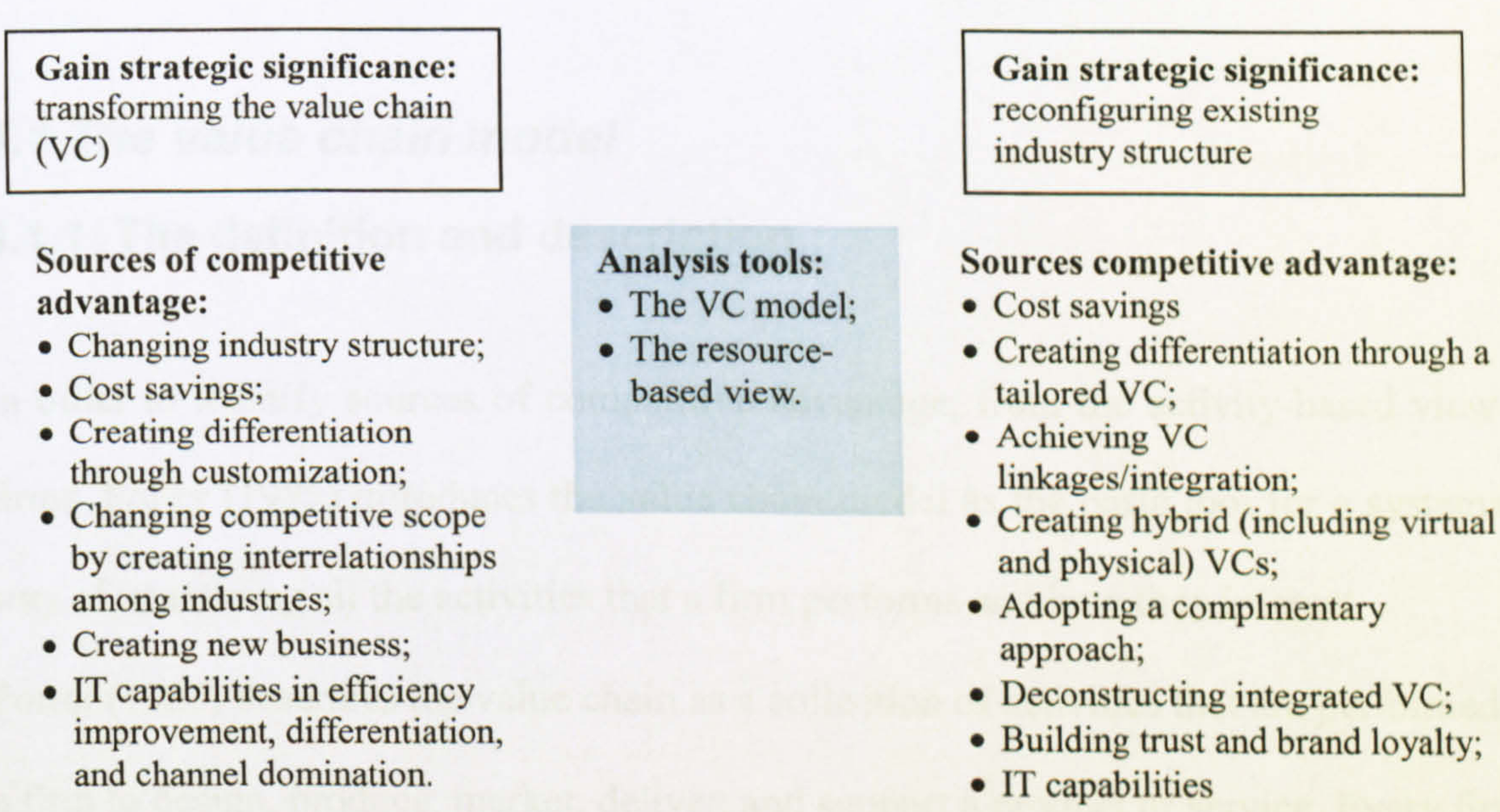
Web-Internet technologies provide distinct features in sharing information and building relationship: accessibility, interactivity, immediacy, connectivity, and information richness and reach, individualization and customization (Madeja and Schoder, 2004, Zwass, 2003, Evans and Wurster, 2000).

Figure 3-1 pulls together the key-points reviewed and illustrates e-business' distinct role in integration.

The value chain framework is an important concept to investigate IT and e-business's role in obtaining competitive advantage. Based on sections 3.1 and 3.2, we can summarise the value-drivers of IT and e-business respectively (**Figure 3-4**). E-business, as the latest stage of IT applications, shares some similar value drivers with previous IT application. Meanwhile, there are distinct differences. When exploiting e-business, (1) it is difficult to maintain advantage in operational efficiency (Porter, 2001); (2) it is flexible to integrate value chains, create hybrid value chains and deconstruct value chains. These activities will, hence, lead to differentiation (Porter, 2001, Evans and Wurster, 1997); (3) different e-business strategies should be adopted by dot-coms and established companies (Porter, 2001).

'IT capabilities' is a key construct that researchers use to investigate IT or e-business role in competitive advantage (e.g. Ross et al., 1996).

Figure 3-4: The value drivers of IT and e-business on competitive advantage



However, it is important to note that it is through organizational innovations and the ability to exploit IT/e-business resources with other organizational and environmental resources to address business problems, e-business or IT can create competitive advantage. Accordingly, some common trends emerge: networked organisation, strategic networks, dis-intermediation and re-intermediation.

CHAPTER 4 LITERATURE REVIEW: COMPETITIVE ADVANTAGE AND THE VALUE CHAIN MODEL

Chapter 4 gives a review of the value chain framework and then situates the value chain framework in a broader theoretical context. Section 4.1 explains the value chain model. Section 4.2 offers the debates on Porter's value chain. Based on the discussion, the virtual value chain model and an integrated approach (which integrates internal i.e. resources and capabilities with environmental i.e. activity-based view analyses) are suggested for adapting the value chain model in the e-business context. Section 4.3 reviews the existing research on the transformation of the value chain framework in the e-business context. The key progress is the virtual value chain. The adoption of virtual value chain model leads to an emerging organizational structure—virtual organization or strategic networks.

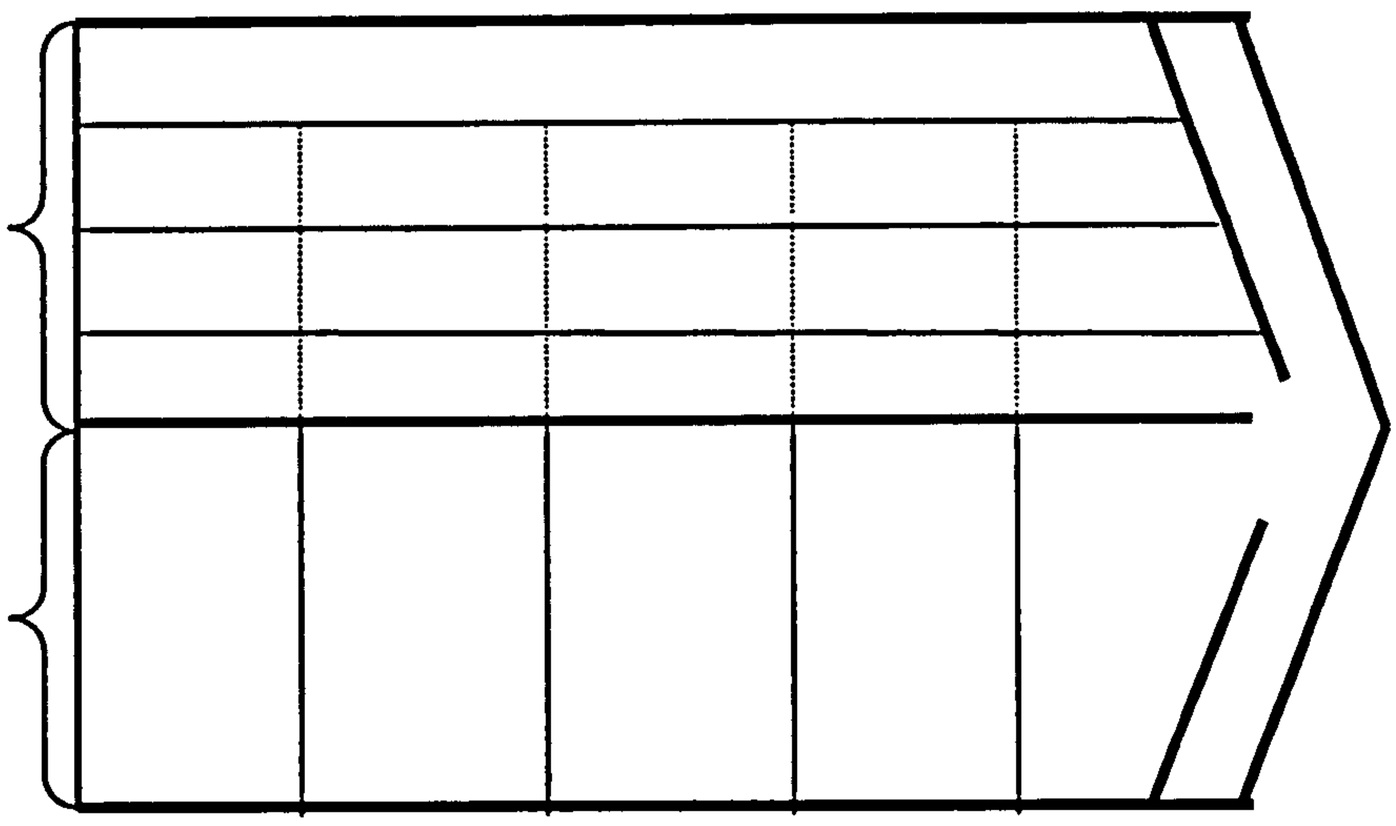
4.1 The value chain model

4.1.1 The definition and description

In order to identify sources of competitive advantage, from the activity-based view of firms, Porter (1985) introduces the value chain model as the basic tool for a systematic way of examining all the activities that a firm performs and how they interact.

Porter (1985) describes the value chain as a collection of activities that are performed by a firm to design, produce, market, deliver, and support a product or service. Every firm's value chain is composed of nine generic categories of distinct interdependent activities which are connected by linkages. The value chain displays total value, and consists of value activities and margin. **(Figure 4-1)**

Figure 4-1: The general value chain



Source: Porter (1985, 1998, p.)

Identifying value activities requires the isolation of activities that are technologically and strategically distinct (Porter, 1985). Value activities should be assigned to categories that best represent their contribution to a firm's competitive advantage. The basic principle is that activities should be isolated and separated that 1) have different economics, 2) have a high potential impact of differentiation, or 3) represent a significant or growing proportion of cost. (Porter, 1985)

Porter gives descriptions of the nine generic categories (**Table 4-1**).

Table 4-1: Value chain activities

Activity	Definition
Primary	Those involved in the physical creation of the product, its marketing and delivery to buyers, and its support and servicing after sale.
1. Inbound logistics	Receiving, storing, and disseminating inputs to the product
2. Operations	Transforming inputs into then final product form
3. Outbound logistics	Collecting, storing ,and physically distributing the product to buyers
4. Marketing and sales	Providing a means by which buyers can purchase the product and inducing them to do so
5. Service	Providing service to enhance or maintain product value
Secondary	Those provide the inputs and infrastructure that allow the primary activities to take place.
1. Corporate infrastructure	Support for the entire value chain, including general management, planning, finance, accounting, legal services, government affairs, and quality management
2. Human resource management	Recruiting, hiring, training, development, and compensation of all types of personnel
3. Technology development	Efforts to improve the product and process
4. Procurement	The function of purchasing inputs used in the firm's value chain

Source: Porter (1985); Porter and Millar (1985)

Linkages among activities are central to competitive advantage. Linkages exist when

the way in which one activity is performed affects the cost or effectiveness of other activities. Therefore, linkages often create trade-offs in performing different activities that should be optimized. Linkages also require activities to be coordinated. Hence, linkages can lead to competitive advantage in two ways: optimisation and coordination.

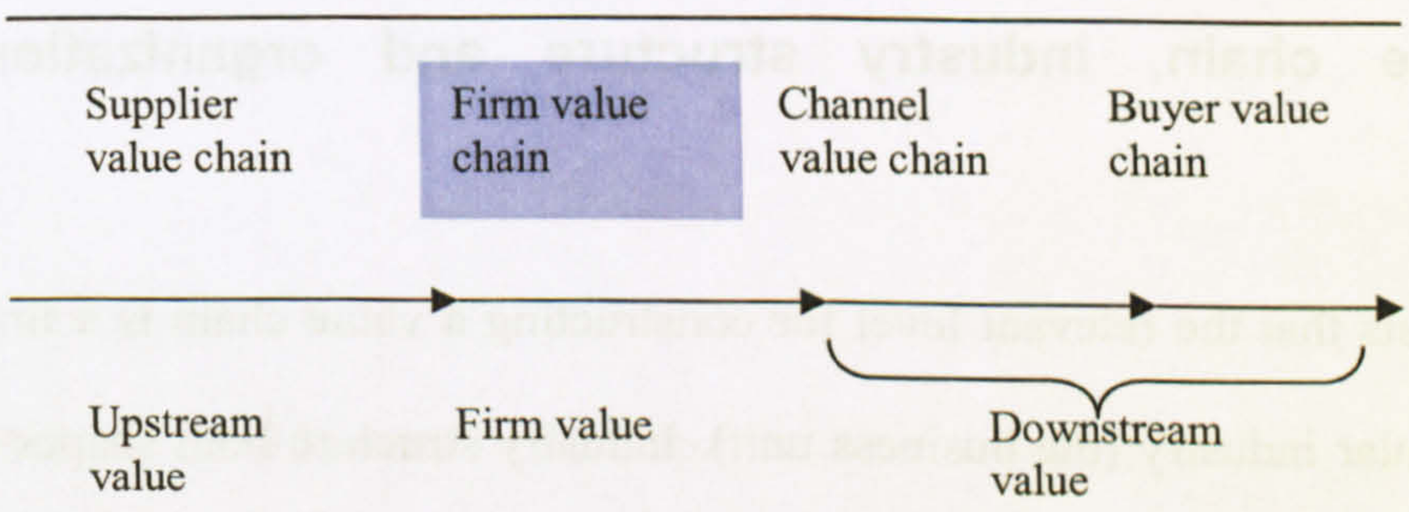
Exploiting linkages usually requires information or information flows that allow optimization or coordination to take place.

Overall, to diagnose competitive advantage, it is necessary to define a firm's value chain for competing in a particular industry.

4.1.2 The value system

A firm's value chain in a particular industry is embedded in a larger stream of activities termed 'value system' by Porter (1985) (see **Figure 4-2**).

Figure 4-2: The value system



Source: Porter and Millar (1985, p.151).

4.1.3 The value chain model and competitive advantage

Using the value chain as a basic model, Porter (1985) identifies the main sources of competitive advantage in a firm's value chain and value system. These can be broken

down into the following areas:

- Redefining the roles of traditional activities around the value chain;
- Optimizing or/and coordinating linkages both within the firm's value chain and industry value system;
- Differentiating the competitive scope or the breadth of the firm's activities around four key dimensions: segment scope, vertical scope, geographic scope, and industry scope. Segment scope refers to the product varieties produced and buyers served; vertical scope refers to the extent to which activities are performed in-house instead of by independent firms; geographic scope refers to the range of regions, countries, or groups of countries in which a firm competes with a coordinated strategy; industry scope refers to the range of related industries in which the firm competes with a coordinated strategy;
- Differentiating the definition of firm's value chain compared with competitors in the industry.

4.1.4 The value chain, industry structure and organizational structure

Porter (1985) suggests that the relevant level for constructing a value chain is a firm's activities in a particular industry (the business unit). Industry structure both shapes the value chain of a firm and is a reflection of the collective value chains of competitors.

Meanwhile, he suggests the value chain can also play a valuable role in designing organizational structure. The value chain can be used to examine how the activities in a firm are and could be grouped. Organizational structure balances the benefits of separation (or differentiation) and integration. Differentiation refers to the separation of like activities. Integration refers to coordinating the separation of organizational units.

4.1.5 The value chain versus the supply chain

Lawton and Michaels (2001) argue that there are subtle differences between value chain and supply chain. They suggest one way of distinguishing the two concepts is that the supply chain should be conceptualised as the physical transport of goods, typically associated with logistics, manufacturing and so forth. The value chain, by distinction, incorporates supply chain operations as well as knowledge activities such as R&D and administration. Thus, Lawton and Michaels (2001) argue that the term 'value chain' is broader and more inclusive. Meanwhile, they suggest that given the general ambiguity in management literature, these two terms are generally used interchangeably.

Similarly, Evans and Wurster (2000, p.10) suggest that "supply chains link supplier and customer corporations together. They are shaped by the same kind of information logic as the value chains within companies, but in a weaker form".

This research adopts Lawton and Michaels' view that 'value chain' is broader and more inclusive than 'supply chain'. But, at the same time, these two terms are sometimes used interchangeably.

4.2 Debates on Porter's value chain model

The significance of using the value chain concept to explore sustainable competitive advantages has been well documented. For example, Stabelland Fjeldstad (1998) state that, despite the challenge from the resource-based view, Porter's value chain framework is presently the accepted language for both representing and analyzing the logic of firm-level value creation. Amit and Zott (2001) suggest that the value chain analysis can be helpful in examining value creation in virtual markets.

Meanwhile, the value chain model has been questioned. Stabelland Fjeldstad (1998) argue that the value chain model is more suitable for the analysis of production and manufacturing firms than for service firms. When analysing service firms, it is not only difficult to assign and analyze activities in terms of the five generic primary value chain categories, but the resulting chain often obscures rather than illustrates the essence of value creation. They suggest that the value chain is just one of the generic value configurations.

The virtual value chain

In the area of e-business, Rayport and Sviokla (1995) argue that the value chain model treats information as a supporting element of the value-adding process, not as a source of value itself. To address this problem, they propose the 'virtual' value chain model, which includes a sequence of gathering, organising, selecting, synthesizing, and distributing information. They suggest managers to focus on the principles that guide value creation across virtual value chain and physical value chain both separately and in combination.

Amplifying Rayport and Sviokla (1995)'s argument, Weiber and Kollmann (1998) suggest that Porter's value chain can be used in two ways in the virtual marketspace:

- Rayport and Sviokla (1995)'s virtual value chain model;

- Expanding on Rayport and Sviokla (1995)' arguments, reinforcing information functioning as a source of competitive advantage in its own right, independent of a physical value chain. Virtual value creation activities are in the form of the collection, systemisation, selection, combination and distribution of information.

An integrative approach

Furthermore, Amit and Zott (2001) argue that while a virtual value chain concept corresponds better to the realities of virtual markets, and in particular to the importance of information goods, there may still be room to capture the richness of e-business activity more fully. They contend that no single entrepreneurship or strategic management theory can fully explain the value creation potential in e-business. Rather an integration of the received theoretical perspective on value creation is needed, a perspective that integrates the theoretical views of the value chain framework (Porter, 1985), Schumpeter's theory of creative destruction (Schumpeter, 1942), the resource-based view of the firm (e.g., Barney, 1991), strategic network theory (e.g., Dyer and Singh, 1998), and transaction costs economics (Williamson, 1975).

Similarly, Barney (1995) argues that a complete understanding of sources of competitive advantage requires the integration of internal (resources and capabilities) with environmental analyses. Barney (1995) suggests that creating sustained competitive advantage depends on the unique resources and capabilities that a firm brings to competition in its environment. In general, a firm's competitive advantage potential depends on the value, rareness, and imitability of its resources and capabilities. Moreover, in order to fully realize this potential, a firm must also be organized to exploit its resources and capabilities.

Fahy and Hooley (2002) suggest that the new economy is a different environment and to succeed in it companies must re-evaluate their strategies and processes, especially the relative importance of the organisational and environmental dimensions. There is an

emerging consensus that both environmental (activity-based view) and resource aspects are important in explaining the nature of competitive advantage in the e-business environment. They suggest adopting a well accepted typology of organisational capabilities proposed by Day (1994).

Wade and Hulland (2004) explain that Day (1994) identifies three distinct sets of capabilities: outside-in capabilities (externally oriented, placing an emphasis on market sensing, customer linking, channel bonding, and technology monitoring e.g. market responsiveness and managing external relationships), inside-out capabilities (deployed from inside the firm in response to market requirements and opportunities e.g. cost control, technology development, integrated logistics and manufacturing/ transformation processes), and spanning capabilities (integrating both capabilities e.g. managing business partnerships, IS management and planning).

Fahy and Hooley (2002) contend that the Internet has different impact on Internet pioneers (visionary early adopters who have seized on the opportunities afforded for reshaping industries and creating significant strategic advantages (Fahy and Hooley, 2002, p.244)) and Internet pragmatists (the more pragmatic early majority firms that have adopted e-business technologies to enhance their existing operations. These are frequently labelled 'bricks and clicks' (Fahy and Hooley, 2002, p.244)). Thereby, they suggest that "the competencies required by Internet pioneers and Internet pragmatists are different, with outside-in and spanning processes being key for the former, while inside-out processes are increasingly important in the latter (Fahy and Hooley, 2002, p.244)".

Based on the aforementioned debates, we can conclude that Porter's value chain model is still an influential framework for examining value creation in e-business. However, it is suggested that some adjustments are needed to make the framework more suitable for the e-business environment. An integrated approach of activity-based and resource-based view might be better in explaining e-business impact on competitive advantage.

Some efforts have been made by researchers for example the proposing of virtual value chain (Rayport and Sviokla, 1996) and the adoption of an integrative approach (Amit and Zott, 2001). But we still know relatively little about the impacts of e-business on most firms (Zhu and Kraemer, 2002). Little theoretical progress has made to explicitly establish the link between value chains and/or virtual value chains and RBV for the purpose of investigating e-business value creation. Meanwhile, little empirical research has been conducted to test these transformations. This research attempts to fill these gaps.

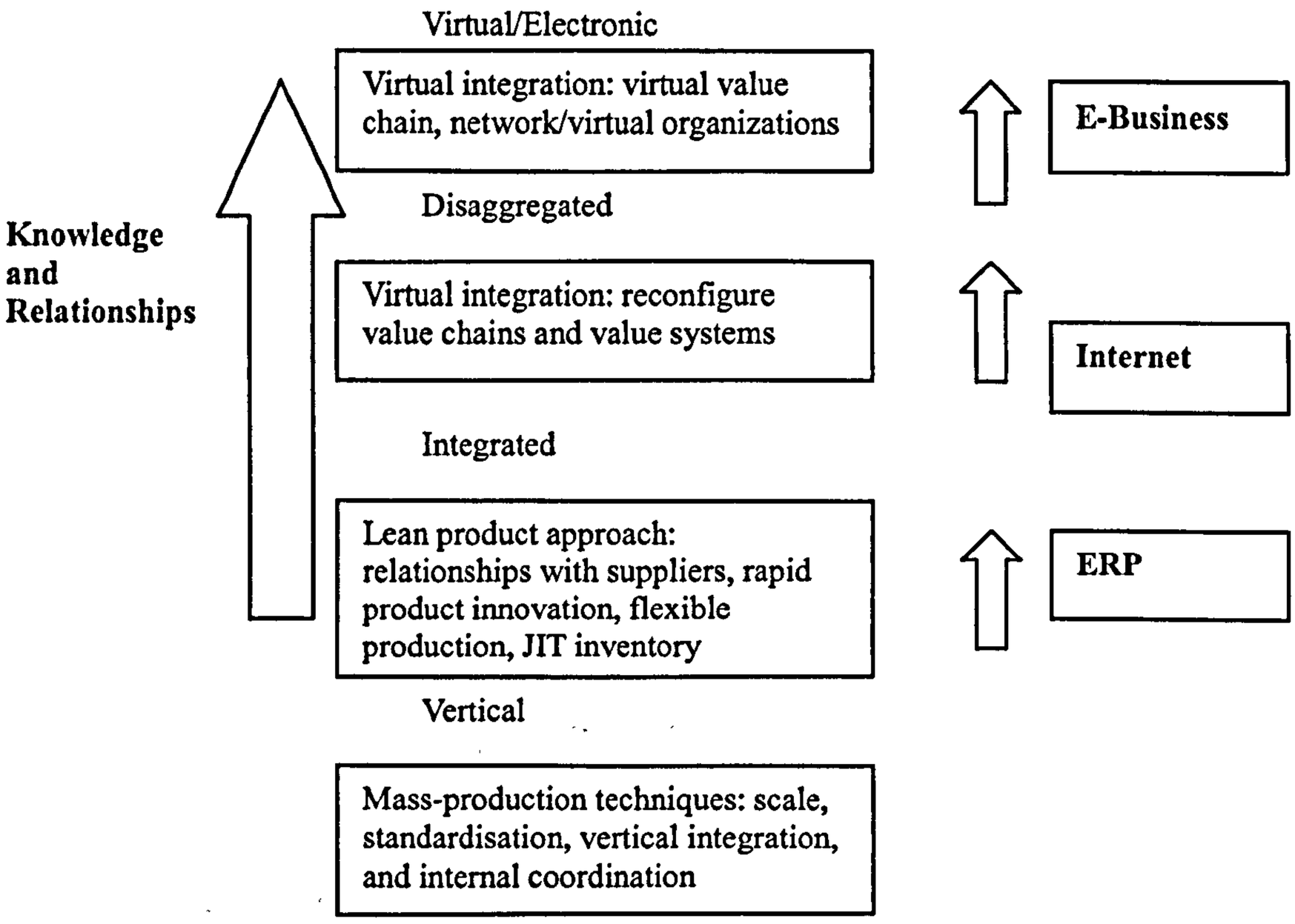
In the next section, examples of the transformations to the value chain in the e-business area will be set out.

4.3 The transformation of the value chain model

4.3.1 Value chain stages of transition

Lawton and Michaels (2001) chart the transformation of the value chain model from vertical to virtual and outline the way in which knowledge and relationships become increasingly important strategy variables (**Figure 4-3**).

Figure 4-3: Value chain stages of transition



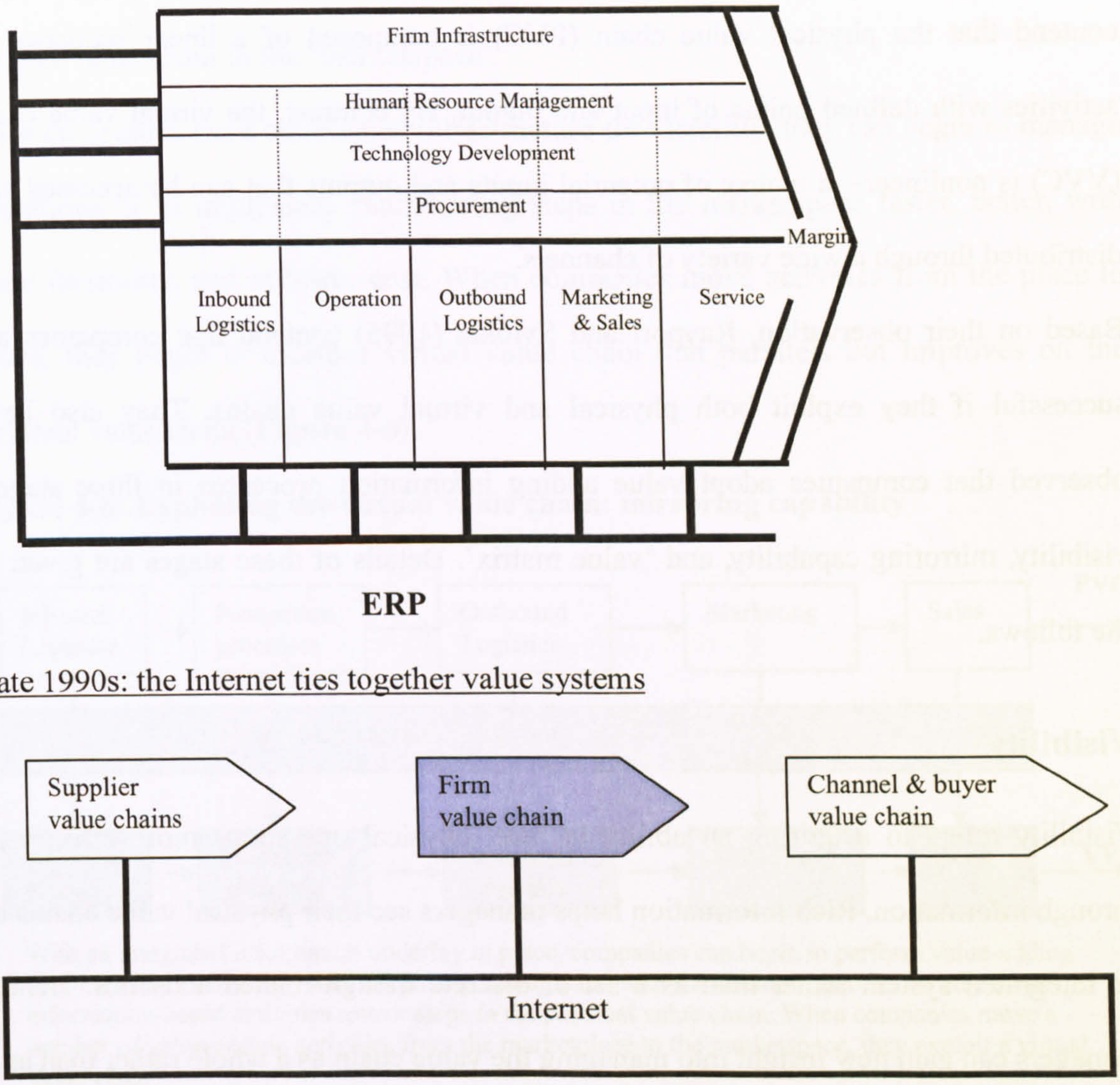
Source: Adapted from Lawton and Michaels (2001, p.92).

They suggest that the adoption of ERP software improved intra-firm co-ordination between frequently disparate functions as conceptualised in Porter's value chain. ERP created an 'electronic nervous systems' to link these functions together, shedding light on the relationship between transportation costs, inventory levels, and operations.

The emergence of the Internet facilitated more and more information sharing between firms, extending the benefits of ERP from the value chain of an individual firm to the entire value system of firms, their suppliers, and customers.

The impact of ERP and the Internet on value systems is shown in **Figure 4-4**.

Figure 4-4: The impact of ERP and the Internet on value systems



Source: Lawton and Michaels (2001, p.96).

Lawton and Michaels (2001) suggest that virtual value chain structure, a network strategy approach and virtual organisations are the key constructs when exploiting e-business. The virtual value chain linkage is perceived as a way of realising the benefits of supply chain integration while avoiding the perceived negative impact of integrating vertically (Evans and Danks, 1998).

4.3.2 Virtual value chain

Rayport and Sviokla (1995) argue that the processes of creating value are not the same

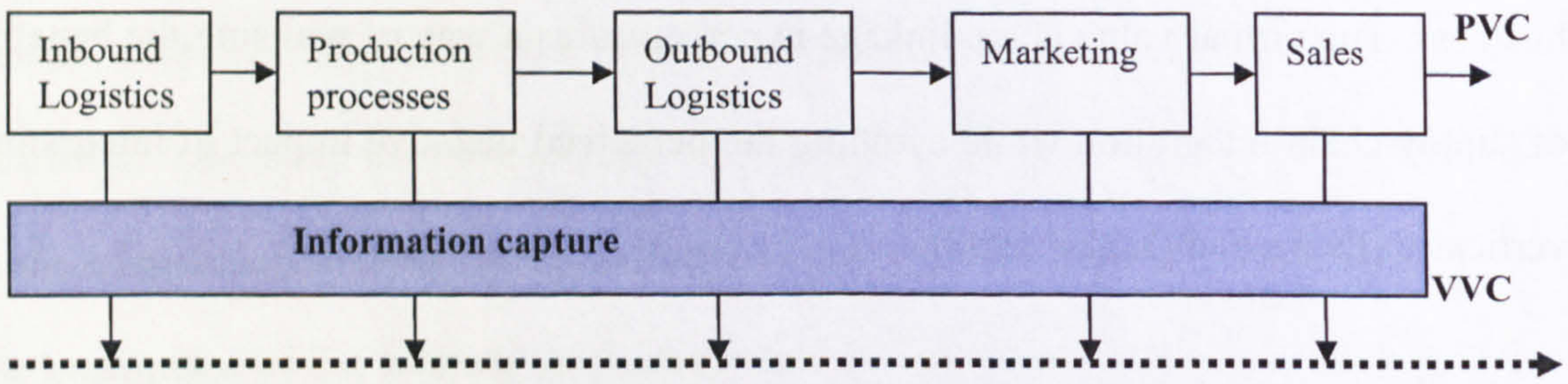
in marketspace (the virtual/information world, often related to a 'virtual value chain') and marketplace (the physical world, often related to a 'physical value chain'). They contend that the physical value chain (PVC) is composed of a linear sequence of activities with defined points of input and output. By contrast, the virtual value chain (VVC) is nonlinear—a matrix of potential inputs and outputs that can be accessed and distributed through a wide variety of channels.

Based on their observation, Rayport and Sviokla (1995) contend that companies are successful if they exploit both physical and virtual value chains. They also have observed that companies adopt value adding information processes in three stages: visibility, mirroring capability, and 'value matrix'. Details of these stages are given in the follows.

Visibility

Visibility refers to acquiring an ability to 'see' physical operations more effectively through information. Rich information helps managers see their physical value chains as an integrated system rather than as a set of discrete though related activities. Hence, managers can gain new insight into managing the value chain as a whole rather than as a collection of parts. By building 'visibility', companies in the process lay the foundation for a virtual value chain (**Figure 4-5**).

Figure 4-5: Building the virtual value chain: visibility



When companies integrate the information they capture during stages of the value chain, they construct an information underlay of the business. This integrated information provides managers with the ability to 'see' their value chains from end to end. (PVC: physical value chain; VVC: virtual value chain)

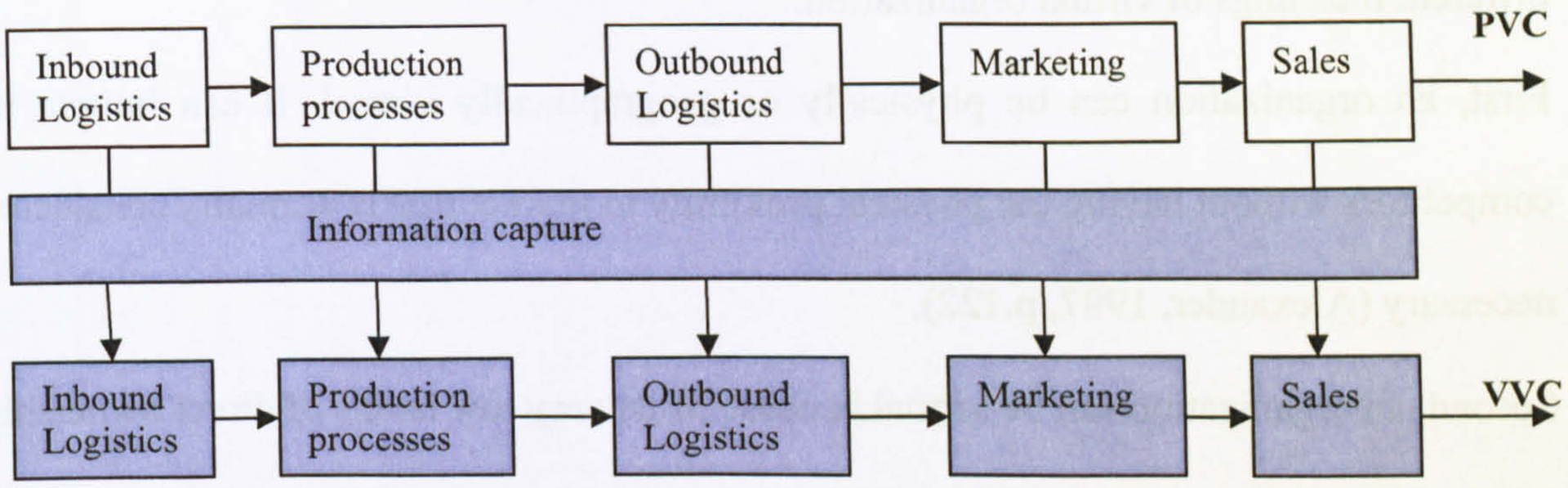
Source: Rayport and Sviokla (1995, 1996).

Mirroring capability

Mirroring capability refers to substituting virtual activities for physical ones, creating a parallel value chain in the 'marketspace'.

Once companies have established infrastructure for visibility, they can begin to manage operations or to implement value-adding steps in the marketspace faster, better, with more flexibility, and at lower cost. When companies move activities from the place to space, they begin to create a virtual value chain that parallels but improves on the physical value chain (**Figure 4-6**).

Figure 4-6: Exploiting the virtual value chain: mirroring capability



With an integrated information underlay in place, companies can begin to perform value-adding activities more efficiently and effectively through and with information. In other words, these information-based activities mirror steps in the physical value chain. When companies move a number of value-adding activities from the marketplace to the marketspace, they exploit a virtual value chain.

Source: Rayport and Sviokla (1995, 1996)

The value matrix and new customer relationship

Once companies become adept at managing their value-adding activities across the parallel value chains, they are ready to develop new space-based customer relationships such as serving customers via Internet-based channel, distributing new products over the Internet as well as through physical channels. Rayport and Sviokla (1995) suggest that each stage of the virtual value chain—including gathering, organizing, selecting, synthesizing, and distributing information—allows for many new extracts from the flow of information, each one of which could constitute a new product or service. These

value-adding steps, in conjunction with the virtual value chain, make up a value matrix that allows companies to identify customer's desires more effectively and fulfil them more efficiently.

4.3.3 Value chain transition and organizational structure change

Lawton and Michaels (2001) argue that virtual value chain structures and their related network-based strategies can lead to emerging organizational structures—virtual organization. Following Alexander (1997), Lawton and Michaels (2001) propose two different meanings of virtual organization:

First, an organization can be physically or geographically virtual. It can imitate its competitors without having the physical proximity to market that is normally considered necessary (Alexander, 1997, p.122).

Second, an organization can be virtual because of its very low levels of direct ownership (Alexander, 1997, p.123) such an organization functions more as a 'broker'—as an organizer or facilitator of activities and processes—than as an actual producer of goods or services per se.

Lawton and Michaels (2001) argue that these definitions are not mutually exclusive and, in many cases, both serve to describe a particular organization. They suggest that it is no longer possible or desirable for single organizations to be entirely self-sufficient. Collaboration is the value of the future; networks are the structure of the future. Network organizations combine the advantages of centralization with decentralization. Organization of the future will be more flexible and customer-centric. Many companies are heading in the direction of viewing themselves as organizers of activities and process i.e. virtual value chain anchor (Dell Computer is a best-documented example). The strategic use of outsourcing will be a very important part of this adaptation.

Lawton and Michaels (2001) and Alexander (1997)'s definition of 'virtual organisation'

is very similar to 'strategic networks' proposed by Wigand (1997). See details in **Section 3.2.3**.

4.4 Summary of the chapter

Porter (1985) explains the key features of the value chain model as: (1) the activity-based view of firm; (2) a basic tool for a systematic way of examining activities and their interactions; (3) a collection of nine generic categories of activities and their linkages.

Based on the value chain model, Porter (1985) identifies sources of competitive advantage in a firm's value chain and value system: redefining activities in the value chain; managing linkages, which leads to competitive advantages in two ways—optimization and coordination; differentiating the competitive scope or the breadth; differentiating the definition of a firm's value chain.

Although it is well accepted that the value chain model is the tool for representing and analyzing the logic of firm-level value creation, some improvements have been suggested for its use in the e-business context:

- Regarding information as a source of competitive advantage (Rayport and Sviokla, 1995, Evans and Wurster, 1997);
- Using a virtual value chain model (Rayport and Sviokla, 1995, Weiber and Kollmann, 1998);
- Improving the virtual value chain model especially by integrating the received theoretical perspectives on value creation (Amit and Zott, 2001);
- Integrating environmental (activity-based view) and resource aspects (i.e. IT managerial skills as a potential source of competitive advantage) (Barney, 1995, Fahy and Hooley, 2002).

In addition, Fahy and Hooley (2002) suggest that different competencies are required by Internet pioneers and Internet pragmatists. This is similar to the argument of Porter (2001). Porter (2001) suggests that dot-coms and established companies should adopt

different e-business strategies. The difference is that Fahy and Hooley (2002) adopted an integrative approach that integrates environmental and resource aspects.

The virtual value chain is a key transformation of the value chain model in the e-business context. Rayport and Sviokla (1995) argue that companies are successful if they exploit both physical and virtual value chains. This is consistent with Porter (2001), who suggests that in order to create a hybrid value chain, dot-coms should bring together virtual and physical activities in a unique configuration. However, different from Porter, Rayport and Sviokla (1995) argue that there are process differences of creating value between physical and virtual value chains. Rayport and Sviokla (1995) also have observed that companies adopt value adding information processes in three stages: visibility, mirroring capability, and 'value matrix'.

By using the value chain model as a framework, some key approaches to the creation of competitive advantage facilitated by e-business could be proposed:

- Managing linkages of value chains and value systems;
- Visibility of value chain which facilitates coordination;
- The integration of physical and virtual value chains;
- Creating new space-based customer relationships;
- Network organizations which emphasize gaining competitive advantage in managing value systems.

CHAPTER 5 LITERATURE REVIEW: EMPIRICAL RESEARCH

Chapter 5 presents an overview of the empirical research focusing on value creation of e-business. The review will be centred on the three approaches discussed in chapters 3 and 4: the value chain approach, the resource-based view, and an integrated approach. And finally, the conceptual framework that guides the research process is proposed.

5.1 Analysis on the empirical studies

This section explores empirical research to-date on the impacts of e-business application on sustainable competitive advantage. This exploration plays a crucial role in operationalising this research.

5.1.1 The use of the value chain framework

Phan (2003) contends that the value chain model highlights interdependence activities in businesses where competitive strategy can be best applied and where information system are most likely to have strategic impact. Zhu and Kraemer (2005) argue that, in order to realize e-business value, firms need to facilitate the usage of e-business in various value chain activities.

Phan (2003) argues that through e-markeplaces, many organizations will eventually be able to integrate activities of their value chains encompassing suppliers, customers, and distribution channels within an industry or across industries. He suggests that gaining competitive advantage requires building on the proven principles of effective strategy. Based on Porter's value chain framework, Phan (2003) presents a study of e-business competitive strategies using the success at Intel.

The value chain concept provides the basis for analysing the case of Intel. The aspects of analysis include:

- Integrate Internet technology to all activities of the enterprise-wide value chain;
- Use Internet technology to redesign a company's processes in order to obtain competitive advantage;
- Achieve competitive advantage by both operational effectiveness and strategic positioning.

The study shows the key success factors for e-business ranked by level of importance are (Phan, 2003, pp.587-89):

- building distinctive strategic position in the market;
- adopting a complementary approach to e-business application;
- support from top management;
- focusing on quality of connections;
- providing worldwide support and customer training;
- deploying the best security protections;
- building and maintaining solid e-business architecture;
- following good e-business project management strategies.

Grounded in the value chain framework and the technology-organization-environment (TOE) framework, Zhu et al., (2004) develop a research model for assessing the value of e-business at the firm level. The TOE framework (Tornatzky and Fleischer, 1990) identifies three aspects of a firm's context that influence the process by which it adopts and implements a technological innovation: technological context, organizational context, and environmental context.

Based on the TOE framework, they identify six factors (technology readiness, firm size, global scope, financial resources, competition intensity, and regulatory environment) that may affect value creation of e-business. Drawing upon the value chain framework, they also propose three dimensions of e-business value throughout the value chain:

impact on commerce with customers, impact on internal operational efficiency, and impact on coordination with business partners. The approach of three dimensions of IT value has been broadly used in the IS literature to study the business value of IT. Zhu et al., (2004) extends this approach to the e-business environment.

Based on survey data from 612 firms across 10 countries (including America and China) in the financial services industry, their research demonstrates several key findings:

- Within the TOE framework, technology readiness emerges as the strongest factor for e-business value, while financial resources, global scope, and regulatory environment also significantly contribute to e-business value.
- Firm size is negatively related to e-business value.
- Competitive pressure often drives firms to adopt e-business, but e-business value is associated more with internal organizational resources (e.g. technological readiness) than with external pressure to adopt.
- While financial resources are an important factor in developing countries, technological capabilities become far more important factor in developed countries.
- Government regulation plays a much more important role in developing countries than in developed countries.

5.1.2 The resource-based view (RBV)

Drawing upon the resource-based view literature, Barua et al., (2004) propose a model positing that a firm's abilities to coordinate and exploit firm resources (processes, IT, and readiness of customers and suppliers) create online informational capabilities (a higher order of resource) which then leads to improved operational and financial performance. They describe online informational capabilities (OIC) as a concept that "addresses specific problems resulting from lack of information access, information

asymmetry, and uncertainty discussed in supply chain management and customer relationship management. OIC not only allow a firm to share tactical and strategic information with business partners, but also enable low-cost execution of customised transactions. (Barua et al., 2004, p. 586)"

Barua et al., (2004, p. 591) argues that "a firm with high levels of OIC is likely to lower the uncertainty of product or service requirements, improve coordination, and enhance satisfaction associated with the online channel, which will encourage value chain activities to be conducted electronically." They contend that a firm with OIC could obtain following advantages:

- improve customer loyalty and attract new customers through enhanced customer satisfaction and empowerment.
- share critical information (e.g. quality, relationship management, design, daily production requirements, and inventory levels) along the SCM and shift procurement activities and transactions online.

Their model was tested with survey data from over a thousand American firms in manufacturing, wholesale, distribution, and retailing. Their study suggests that it is imperative that the firm considers the (1) readiness of other players (e.g. customers and suppliers) in the value network, and perhaps even allocate resources to increase such readiness when necessary, and the (2) importance of supplier-side interactions in improving customer-side interactions.

Grounded in the resource-based view of the firm and the dynamic capabilities, as well as two surveys to 260 manufacturing companies and 114 retailers respectively, Zhu and Kraemer (2002) and Zhu (2004) develop a theoretical framework for assessing the value of e-business to firm performance. Their framework categorizes the major metrics into three constructs: (1) e-commerce capability metrics, (2) IT infrastructure metrics, and (3) performance metrics (**Figure 5-4**). "In this framework, two sets of variables—e-commerce capabilities and IT infrastructure—are associated, jointly and individually,

with firm performance. E-commerce capability represents a firm's ability to interact with its customers and business partners and conduct business over the Internet (Zhu, 2004, p.169)." Zhu (2004)'s definition of E-commerce capability is very similar with OIC defined by Barua et al., (2004).

The findings based on Zhu and Kraemer (2002) and Zhu (2004) also highlight the notion of resource complementary for e-commerce investments, wherein companies must first build the necessary resources and adjust the business processes before e-commerce initiatives become productive. Zhu and Kraemer (2002) suggest that traditional manufacturers adopting new Internet initiatives must have the complementary IT infrastructure and have the right alignment with other complementary organizational resources.

Based on RBV and e-business strategic perspective and a survey of 56 enterprises in Hubei Province in China, Zhao et al., (2008) find that information sharing capabilities are intermediate and transferable forces that help transforming IT-related resources into the collaborative process capabilities, and thus, leading to competitive advantage.

5.1.3 An integrative approach

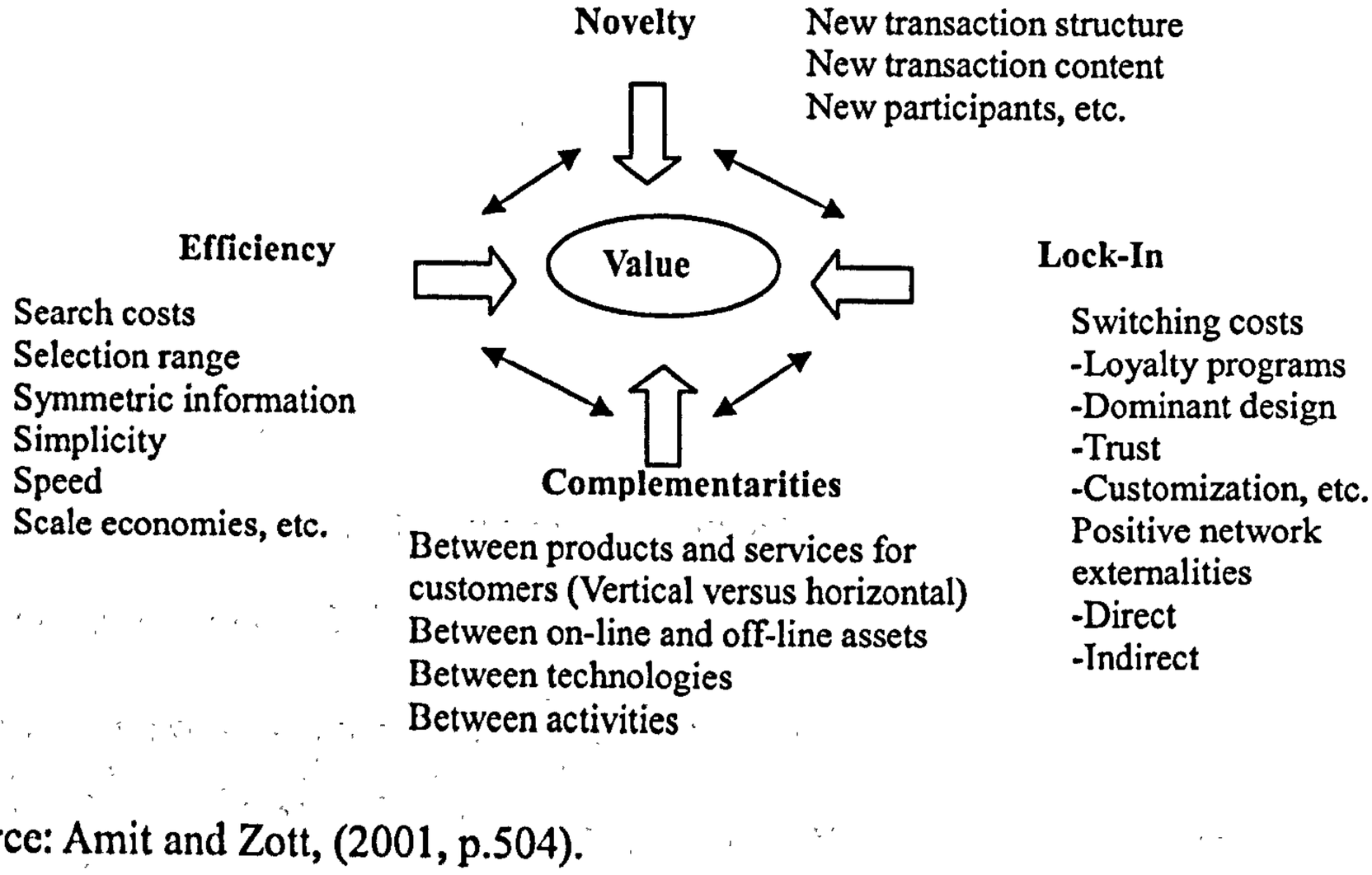
Zhu (2004) reviewed the literature on the business value of e-business and IT published in major IS journals during the past ten years. They found that most research used multiple theoretical perspectives such as transaction-cost economics, agency theory, value chain analysis, and the market efficiency hypothesis. This is consistent with the finding of Amit and Zott (2001): no single entrepreneurship or strategic management theory can fully explain the value creation potential in e-business. Rather an integration of the received theoretical perspective on value creation is needed.

In order to investigate the value creation potential embedded in virtual markets, Amit and Zott (2001) developed a value-drivers model, which includes four primary and

interrelated factors that enhance the value creation potential of e-business: efficiency, complementary, lock-in, and novelty (**Figure 5-1**). Their model is drawn on the integration of the received entrepreneurship and strategic management literatures (i.e. the value chain analysis, Schumpeterian innovation, the resource-based view of the firm, strategic network theory, and transaction cost economics) and inductive case studies of 59 American and European companies. In the research, they define 'an e-business firm' as "one that derives a significant proportion (at least 10%) of its revenue from transactions conducted over the Internet (Amit and Zott, 2001, p.500)."

To enable such integration, they offer the 'business model' as a unit of analysis for research on value creation in e-business. They define a 'business model' as "depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities (Amit and Zott, 2001, p.511)".

Figure 5-1: Sources of value creation in e-business



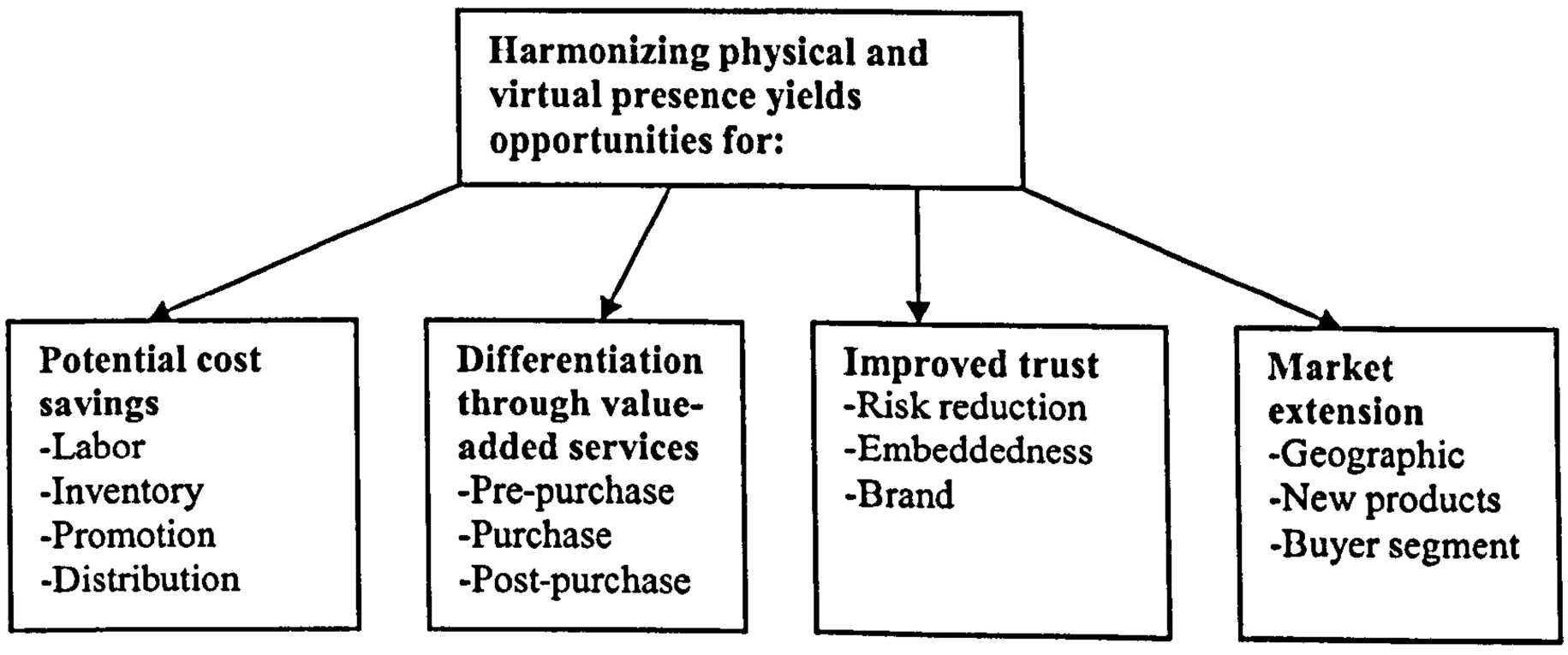
Source: Amit and Zott, (2001, p.504).

They suggest that virtual markets opens new sources of innovation that may require a parallel shift in strategic thinking towards more integrative, dynamic, adaptive, and entrepreneurial strategies. They also suggest that as a firm's scope and its boundaries become less clear in e-business context, strategic analyses of e-business will have to move beyond the traditional conception of the 'firm' as the unit of analysis.

Steinfield et al., (2002) use qualitative case studies to investigate sources of competitive advantage in integrating e-commerce and physical infrastructure (so called 'click-and-mortar' approach and 'cyber-enhanced retailing'). Here, e-commerce is concerned with B2C area and defined as "a marketing channel" and "a means to interact with end-consumers (Steinfield et al., 2002, p.93)".

Derived from theories in competitive strategy, marketing, information systems, and transaction cost economics, a framework to investigate synergy benefits is proposed. This framework includes four categories (shown in **Figure 5-2**): (1) lower costs; (2) differentiation through value-added services; (3) improved trust; and (4) geographic and product market extension.

Figure 5-2: Framework for identifying sources of benefits from click-and-mortar application



Source: Steinfield et al., (2002, p. 97).

They suggest that managerial intervention to prevent channel conflicts and achieve synergies is needed to achieve these benefits.

5.1.4 A summary of the key theoretical constructs exploited and the related research context

Table 5-1 summarises the key theoretical basis adopted by the empirical research and their research context.

Table 5-1 A summary of the empirical research's key theoretical constructs and research context

Key theoretical constructs	Western countries	China or cross countries including China	Cross countries
The value chain framework (VCF)	Phan (2003) (Qualitative research, also used KSF, research context: semiconductor manufacturing industry, US).	Zhu et al. (2004) (Quantitative research, also used TOE, research context: financial industry across 10 countries, including China).	
Resource-based view (RBV)	Barua et al.,(2004) (Quantitative research, proposed OIC, research context: cross industries study, US); Zhu (2004) (Quantitative research, proposed e-commerce capability, research context: retail industry, US); Zhu and Kraemer (2002) (Quantitative research, proposed e-commerce capability, research context: the manufacturing industry, US).	Zhao et al., (2008) (Quantitative research, proposed e-business capabilities, research context: China).	
An integrated approach (VCF and RBV)	Steinfield et al., (2002) (Qualitative research, proposed a framework to investigate synergy benefits, research context: click-and-mortar cases, Netherlands).		Amit and Zott (2001) (Qualitative research, proposed a value-driver model, research context: e-business firms, US and Europe).

(KSF: key success factor, TOE: technology-organization-environment, OIC: online information capabilities)

Drawing on the research, we can conclude that, based on the RBV, OIC (or so-called e-business capabilities or information sharing capabilities) is a key construct to investigate e-business enabled competitive advantage. OIC are intermediate and transferable forces which could enable the enhanced collaborative capabilities, and thus create competitive advantage. OIC are the basis of creating virtual value chain.

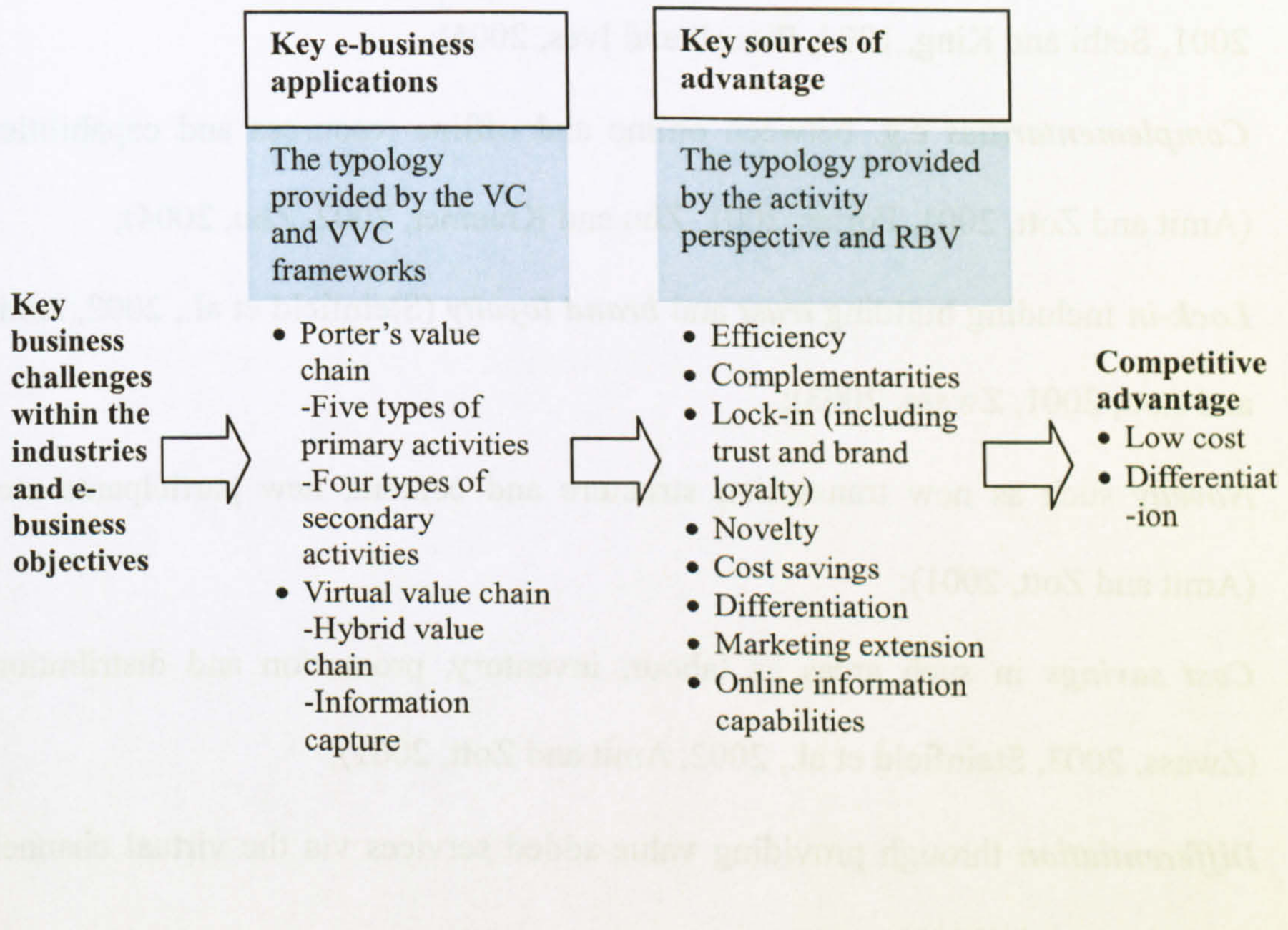
Research from both the RBV and the value chain perspectives demonstrates the need of addressing resource complementary when exploiting e-business (e.g. Porter, 2001, Wade and Hulland, 2004, Zhu et al., 2004).

5.2 Research framework

Based on the literature review carried out in chapters 3, 4, and 5, we can conclude that an integrative approach is more likely to capture the richness of e-business value creation. While the value chain framework is useful for analysing and categorizing the key categories of e-business applications, the RBV is helpful in explaining how firms can create value from e-business resources.

Hence, in order to investigate e-business value creation, we propose a theoretical framework that links the value chain framework and resource-based view (RBV) perspective (Figure 5-3).

Figure 5-3: The theoretical framework for investigating e-business value creation



5.3 Summary of the chapter

Through the review of the empirical research that investigates e-business' impact on competitive advantage, we can conclude that the value chain framework (an activity-based view) is still a key tool for investigation. Equally important is the resource-base view (RBV) in explaining how firms can create competitive value from IT and e-business resources.

Based on the investigated empirical research and the literature review in chapter 3, 4, and 5, some key sources of competitive advantage or value creation in e-business have emerged:

- ***Efficiency*** including factors such as speed and scale economies (Amit and Zott, 2001, Sethi and King, 1994, Piccoli and Ives, 2005);
- ***Complementarities*** e.g. between online and offline resources and capabilities (Amit and Zott, 2001, Porter, 2001, Zhu and Kraemer, 2002, Zhu, 2004);
- ***Lock-in*** including building ***trust*** and ***brand loyalty*** (Steinfield et al., 2002, Amit and Zott, 2001, Zwass, 2003);
- ***Novelty*** such as new transaction structure and content, new participants etc. (Amit and Zott, 2001);
- ***Cost savings*** in such areas as labour, inventory, promotion and distribution (Zwass, 2003, Steinfield et al., 2002, Amit and Zott, 2001);
- ***Differentiation*** through providing value-added services via the virtual channel (Steinfield et al., 2002);
- ***Marketing extension*** in geographic areas, new products, and buyer segment (Steinfield et al., 2002);
- ***Online information capabilities*** in improving uncertainty in supply chain management and customer relationship management (Barua et al., 2004, Zhao et

al., 2008, Zhu, 2004). By obtaining OIC, companies can better manage linkages of value chains or value systems and realising virtual value chains.

Integrating these key sources of competitive advantage with the value chain and virtual value chain frameworks, a theoretical framework is proposed which links the value chain framework and resource-based view (RBV) perspective.

CHAPTER 6 RESEARCH METHDOLOGY

In this chapter, first, the main philosophical positions and the main research methods adopted are explained. Secondly, the criteria of case selection are presented as well as an overview of the case companies. Thirdly, the systematic case analysis strategy adopted in this research is outlined.

6.1 Methodological setting and the context of this study

In this section, the main philosophical positions that underpin the design of this research will be introduced. Meanwhile, the main research methods used will be explained, followed by an overview of the research process used in this research. Finally, the validity and reliability of case study method is discussed.

6.1.1 The methodological position

The main philosophical positions influence a number of fundamental choices in research design (Easterby-Smith et al., 2001):

1) By identifying what kind of evidence is required and how it is to be gathered and interpreted;
2) By indicating the limitations of particular approaches.

To justify the methodologies and methods that will be employed in the research, this section begins with a critical review of key considerations which influence the methodological position: epistemologies and ontologies as well as the role of theory in relation to research.

Epistemologies and ontologies

Both ontology and epistemology inform the theoretical perspective, which then informs the methodology. Each theoretical perspective embodies a certain way of understanding what is (ontology) as well as a certain way of understanding what it means to know (epistemology) (Crotty, 1998).

"An epistemological issue concerns the question of what is (or should be) regarded as acceptable knowledge in a discipline". A central issue is the question of whether the social world can and should be studied according to the same principles, procedures, and ethos as the natural sciences (Bryman and Bell, 2003, p.13).

An ontological issue is concerned with the nature of social entities. "The central point of orientation here is the question of whether social entities can and should be considered objective entities that have a reality external to social actors, or whether they can and should be considered social constructions built up from the perceptions and actions of social actors (Bryman and Bell, 2003, p.19)".

According to Bryman and Bell (2003), there are two sets of alternative positions for epistemologies and ontologies: (1) positivism versus interpretivism; (2) objectivism versus constructionism. However, there is a vital philosophical tradition of social philosophy - critical theory. Following critical social science, critical IS researchers investigate the economic, historical, cultural, and political conditioning and shaping of the IS development and adoption in organisations (Cecez-Kecmanovic, 2001). These issues are not the focus of this research.

Details of the two sets of alternative positions for epistemologies and ontologies are explained in the following:

Positivism entails the following principles (Bryman and Bell, 2003):

- The principle of phenomenalism. Only phenomena and hence knowledge confirmed by the senses can be warranted as knowledge.
- The principle of deductivism. The purpose of theory is to generate hypotheses that

can be tested and that will thereby allow explanations of laws to be assessed.

- The principle of inductivism. Knowledge is arrived at through the gathering of facts that provide the basis for laws.
- Objective. Science must (and presumably can) be conducted in a way that is value free.
- There is a clear distinction between scientific statements and normative statements and a belief that the former are the true domain of the scientist.

Interpretivism is an alternative to positivism. Researchers who adopt interpretivism share a view that the subject matter of the social science is fundamentally different from that of the natural sciences. The study of social science therefore requires a different logic of research procedure, one that requires the social scientists to grasp the subjective meaning of social action (Bryman and Bell, 2003).

Objectivism asserts that social phenomena and their meanings have an existence that is independent of social actors (Bryman and Bell, 2003).

Constructionism is an alternative to objectivism. This position asserts that social phenomena and their meanings are continually being accomplished by social actors (Bryman and Bell, 2003).

Social constructionism has two basic assumptions (Habermas, 1970):

- An ontological assumption, that reality is not objective and exterior, but is socially constructed and given meaning by people. Hence, the aims of the researcher are to understand how people invest 'structures' to help them make sense of what is going on around them. The researcher should therefore try to understand and explain 'why' people have different experiences rather than search for external causes and fundamental laws to explain behaviour.
- An epistemological assumption that people make sense of the world especially through sharing their experiences with others via the medium of 'language'. Much attention is give to the use of language and conversations between people as they

create their own meanings.

The role of theory in relation to research: deductive and inductive theory

"Deduction entails a process in which: theory→observations/findings, with induction the connection is reversed: observations/findings→theory (Bryman and Bell, 2003, p.12)".

"Inductive methods place greater emphasis on the process of data collection and analysis. In the initial stages data is collected within the bounds of a particular problem focus, but without any clear-cut hypothesis in mind (Hinton, 1994, p.66)".

"Deductive approaches have a tendency to constrain the researcher to assessing the hypotheses under investigation and tend not to allow for unforeseen developments (Hinton, 1994, p.66)".

Research strategy: quantitative and qualitative

Many writers on methodological issues find it helpful to distinguish between quantitative and qualitative research. For them, these two research strategies differ with respect to the aforementioned key considerations (Bryman and Bell, 2003) (illustrated in Table 6-1).

Table 6-1: Fundamental differences between quantitative and qualitative research strategies

	Quantitative	Qualitative
Principle orientation to the role of theory in relation to research	Deductive; testing of theory	Inductive; generation of theory
Epistemological orientation	Natural science model, in particular positivism	Interpretivism
Ontological orientation	Objectivism	Constructionism

Source: Bryman and Bell (2003, p.25).

Justification of my research perspective

This research locates in the philosophical tradition of social *constructionism* because the nature of the key research question and the dynamic context of the research

phenomenon require a deep understanding of the situation, gathering rich data from which ideas can be induced, the incorporation of stakeholder perspectives, and generalization through theoretical abstraction (Easterby-Smith et al., 2001).

The key research question is stated as follows:

> *How to find a systematic way of examining e-business' impact on the key sources of competitive advantage gained by the companies under study?*

E-business research, especially e-business strategy and value creation, is located in the research areas where theory and understanding are not well developed. With specific reference to the Chinese context, e-business development is in the early stage. E-business phenomenon is dynamic and not yet mature or settled. The terminology and common language and set of definitions are not yet widely accepted. Hence, a quantitative research strategy that is influenced by positivism and objectivism, as well as deductive orientation, is not suitable for the aim of this research giving the ambiguity of terminology and definitions in e-business.

This epistemological position suggests the use of qualitative methods, which underpins the understanding of meaning. The lack of solid prior theorising about the topic makes the inductive case study approach an appropriate choice of method (Eisenhardt, 1989). Van Maanen (1983, p.9) defines qualitative techniques as "an array of interpretative techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world".

The most fundamental of all qualitative methods is in-depth interviewing (Easterby-Smith et al., 2001). In this research, semi-structured qualitative interviews were conducted to gain insight on how managers construct the reality of e-business phenomena formed from the companies' capabilities and values having been developed over time in order to help companies gain advantages from e-business.

Benbasat et al. (1987, p.369) states that case study research can be considered

particularly useful where "research and theory are at their early, formative stages". Case studies are the preferred strategy when 'how' or 'why' questions are being posed, and when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context (Yin, 1994, p.1).

Case study can be used to accomplish various aims: to provide description, test theory, or generate theory (Eisenhardt, 1989). According to Lorenzo et al., (2005), there are two positions when deciding how much shape a qualitative research design should have:

- Social processes cannot be approached with explicit conceptual frameworks or standard instruments (Miles and Huberman, 1994).
- Tighter designs are adopted: pre-existent conceptual frameworks, a set of research questions, and predesigned instruments for collecting data.

This research lies between the two positions: a definition of primary purpose, constructs and questions, but allowing an open-end process of inductive exploration and pattern recognition. This position is similar to that of Lorenzo et al., (2005) and Pettigrew (1997).

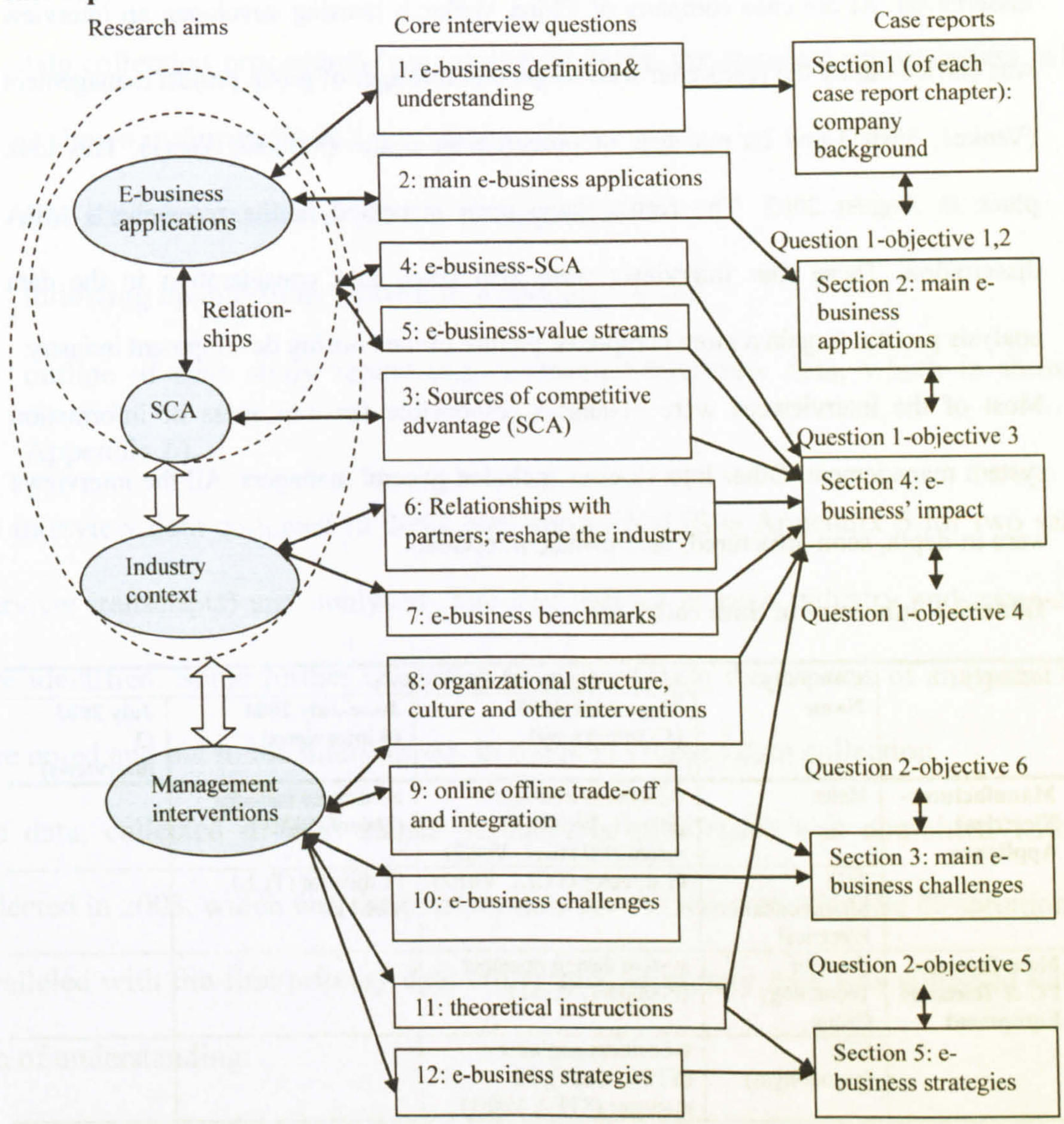
6.1.2 An overview of the research process

In this section, a brief introduction to the process of selecting cases and collecting data is presented.

The first stage was a literature review conducted to identify research gaps and formulate basic research questions and core interview questions (See Appendix 3). As the research questions have stated in Chapter 1, the focus of this research is to explore the relationships between e-business applications and sources of competitive advantage.

The focus of this research, the research questions, and the review of the literature led to the formulation core interview questions (see Appendix 3). Subsequently, the question responses were mapped onto case reports which finally led to the answers to the research questions. Figure 6-1 illustrates these links. Question 3 and 4 will be answered based on within industrial and cross industrial comparison.

Figure 6-1: The relationships between research aims, key interview questions, and case reports



In the light of these research questions, data collection was carried out in two stages. Stage one involved interviews with managers who were responsible for e-business or information system management in six case companies (See Table 6-2). This took place between June and July 2004. Stage two involved interviews with the aforementioned six case companies as well as three further case companies. In total, thirteen interviews were carried out, occurring between May and June 2005 (See Table 6-2).

As shown in Table 6-2, the case companies were located in three sectors - manufacturing, housing development, and e-commerce.

For the case companies in the housing development industry, three interviews were

carried out in July 2003. The results have been presented in the researcher's MSc dissertation. At the case company of China Vanke, a housing developer, an interview was carried out by the researcher with its general manager of group project management (Vanke1, Visit1) and its manager of procurement centre (Vanke2, Visit1). This took place in August 2002. The results have been presented in the researcher's MBA dissertation. These four interviews were also taken into consideration in the data analysis process to gain a more completed picture of the housing development industry. Most of the interviewees were managers responsible for e-business or information system management. Other interviewees included general managers. All the interviews were in-depth, semi-structured, face-to-face interviews.

Table 6-2 Summary of data collection

Industry	Company Name	Information on the interviews		
		May- June 2005 (13 interviews)	June-July 2004 (6 interviews)	July 2003 (3 interviews)
Manufacturer-Electrical Appliance	Haier	e-business manager (Haier1, Visit2); IT manager (Haier2, Visit2)	e-business manager (Haier1, Visit1)	
	TCL International Electrical	IT director (TCL1, Visit2)	IT director (TCL1, Visit1)	
Manufacturer-PC & Telecoms Equipment	Founder Technology Group	system design manager (Founder1, Visit1)		
	STE (pseudonym)	e-business engineer (STE1, Visit1); IT manager (STE2, Visit1)		
Housing Developers	China Vanke	IT manager (Vanke5, Visit4)	assistant general manager (Vanke4, Visit3)	e-procurement manager (Vanke3, Visit2)
	Gemdale	IT manager (Gemdale2, Visit3); assistant general manager (Gemdale3, Visit3)	knowledge management manager (Gemdale1, Visit2)	knowledge management manager (Gemdale1, Visit1)
	Beijing Vantone e-house	information management manager (Vantone2, Visit3); general manager (Vantone3, Visit3)	information management manager (Vantone2, Visit2)	information management manager (Vantone1, Visit1)
E-commerce	EGame (pseudonym)	billing system platform director (EGame1, Visit2)	e-commerce manager (EGame1, Visit1)	
	Dangdang.com	assistant to marketing executive (Dangdang1, Visit1)		

In both data collection stages, the same case study protocol was followed (shown in Appendix 5). The case study protocol includes:

- the research questions and objectives,
- data collection procedures (e.g. access methods, the standard access letters, which is shown in Appendix 2)
- core interview questions (shown in Appendix 3)
- following up questions (shown in Appendix 4), and
- outline of case study report (e.g. transcript interview data, which is shown in Appendix 6).

The interview data collected in 2004 was transcribed (See Appendix 6 for two sample interview transcripts) and analysed. The key themes in each industry and cross-sector were identified. Some further questions emerged during the process of analysis. These were noted and put to the interviewees in the next stage of data collection.

The data, collected in both stages on housing developers was combined with that collected in 2003, which was the primary data for the researcher's MSc dissertation.

Paralleled with the first/primary data collection, secondary data was collected with the aim of understanding:

1) The companies' background;
2) Senior leaders' views on competitive advantage and e-business applications.
3) Corporate strategies.

The timing of the research is crucial in the e-business development in China. Between 2004 and 2005, following a few years of e-business applications, Chinese companies were at the stage of imitating Western e-business models and experimenting with the ways of localising these models. They were willing to discuss their experiments in order to gain valuable e-business knowledge. Hence, the qualitative data gained in this period provides a valuable insight for understanding the transformation of different Western business models and the obstructions of doing these. Meanwhile, by combining the

secondary data between 1999 and 2011, this research also provides a historic view of the e-business development in China. As a consequence, it presents a holistic view on the key trends and patterns of the e-business development in China at different stages—from initiation to taking off.

In both stages of data collection and analysis, this research followed the case study research process proposed by Eisenhardt (1989) (Shown on **Table 6-3**).

Table 6-3: Process of testing and building theory from case study research

Step	Activity	Reason
1) Getting started	Definition of research question Possibly a priori **constructs**	Focuses efforts Provides better grounding of construct measures
2) Selecting cases	Specified population Theoretical sampling	Constrains extraneous variation and sharpens **external validity** Focuses efforts on theoretically useful cases—i.e. those that replicate or extend theory by filling **conceptual categories**
3) Crafting instruments and protocols	Multiple data collection methods	Strengthens grounding of theory by triangulation of evidence
4) Entering the field	Overlap data collection and analysis, including field notes Flexible and opportunistic data collection methods	Speeds analyses and reveals helpful adjustments to data collection Allows investigators to take advantages of emergent themes and unique case features
5) Analyzing data	Within-case analysis Cross-case pattern search using divergent techniques	Gains familiarity with data and preliminary theory generation Forces investigators to look beyond initial impressions and see evidence through multiple lenses
6) Shaping hypotheses	Iterative tabulation of evidence for each construct Replication, not sampling, logic across cases Search evidence for "why" behind relationships	Sharpens construct definition validity and measurability Confirms, extends, and sharpens theory Builds **internal validity**
7) Enfolding literature	Comparison with conflicting literature Comparison with similar literature	Builds internal validity, raises theoretical level, and sharpens **construct** definitions Sharpens generalizability, improves construct definition, and raises theoretical level
8) Reaching closure	Theoretical saturation when possible	Ends process when marginal improvement becomes small

Source: Eisenhardt (1989)

6.1.3 Validity and reliability in case study research

The quality of research design can be judged by logic tests. Four tests are commonly used to establish the quality of any empirical social research (Yin, 1994). The tests are as follows:

1. Construction validity: establishing correct operational measures for the concepts being studied.

2. Internal validity (for explanatory or causal studies only, and not for descriptive or exploratory studies): establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships.

3. External validity: establishing the domain to which a study's findings can be generalized.

4. Reliability: demonstrating that the operation of a study—such as the data collection procedures—can be repeated, with the same results.

Based on Yin (1994) and Riege (2003)'s work, a summary of logic tests and techniques for establishing validity and reliability in case study research is given in the following table. (Shown on **Table 6-4**)

Table 6-4: The tests and techniques for establishing validity and reliability in case study research

Case study design tests	Case study techniques	Application in the research
Construct validity	Use multiple sources of evidence	Interviews and documentation
	Establish chain of evidence	Explicit links between questions, data, and conclusions
	Have key informants review draft case study report	Send to interviewees
Internal validity	Do within-case analysis, then cross-case pattern matching	1) Pattern match: compares an empirically based pattern with a predicted one; 2) Pattern search: identify explanatory concepts and central categories
	Do explanation-building	Stipulate a presumed set of causal links about a phenomenon
	Assure internal coherence of findings and concepts are systematically related	1) Build typologies; 2) Do cross-case synthesis
External validity	Use replication logic in multiple-case studies	Be generalizable to theoretical propositions
	Define scope and boundaries of reasonable analytical generalization for the research	
	Compare evidence with extant literature	
Reliability	Give full account of theories and ideas	
	Assure congruence between research issues and features of study design	
	Use case study protocol	Contain the instrument, procedures and general rules to be followed
	Develop case study data base	A formal assembly of evidence
	Use peer review/examination	

Source: Adapted from Yin (1994) and Riege (2003)

The case study techniques listed on **Table 6-4** were carefully followed in the first and second stages of data collection and analysis. Further detailed explanations on the applications of the techniques of pattern match, explanation-building, and logic coherence in the analysis process will be introduced in the section on case analysis strategy.

Following the suggestions given by Yin (1994), the research design was based on multiple cases and multiple evidences, thereby allowing construct validity; which will follow pattern matching and explanation-building to deal with internal validity. It will be seen to rely on analytical generalization rather than statistic generalization to deal with external validity; which will follow explicit, systematic methods of qualitative analysis to allow reliability.

Despite the techniques adopted to achieve validity and reliability, it is necessary for researchers to recognize that there is potential bias introduced by their value assumptions. For example, the data collection and data analysis processes in case study research are both subject to the influence of the researcher's characteristics and background. They rely heavily on the researcher's interpretation of events, documents and interview material (Galliers, 1992).

In dealing with this, the first thing is to be explicit about the possible bias. Then, corresponding methods can be used to address respective biases.

6.2 Selecting cases and overview of the case studies

In this section, two issues will be addressed. First, an introduction to the criteria for selecting case companies is set out. Of these criteria, detailed information is given on the conceptual categories, including tentative e-business definition, products categories, strategies towards e-business technology adoption, and business models. Second, an overview of the case companies is presented.

6.2.1 The criteria for selecting case companies

The selecting of the cases follows three principles: theoretical sampling, specific population, and accessibility.

Theoretical sampling

Glaser and Strauss (1967) propose theoretical sampling. They argue that the selection of cases should be designed to produce as many categories and properties of categories as possible and to relate categories to one another. "The fundamental logic of theoretical sampling is that data needs to be collected from areas which are most likely to throw light on the central questions of the study (Easterby-Smith et al., 2001)". Potential cases should meet the following requirements: Firstly, the cases should have actively applied e-business in their respective industry. Secondly, the cases should fit the conceptual categories of e-business applications (presented in **section 6.2.2**), which were formulated during the literature review process.

Specific population

The cases were selected from three specific industrial sectors in economic prosperous areas in Mainland China: Yangtze River Delta, Pearl River Delta, Bohai Rim region and

the national capital Beijing (See appendix 1 for more information on these regions). These regions have benefited from China's coastal region development strategy developed in the 1980s. These coastal areas can use overseas funds and draw on advanced experience on technology and management from foreign countries. Having a population of about 200 million, these coastal areas have then boosted nationwide reform and economic construction with their extensive opening and fast economic development (Gov.cn, 2006c). Similarly, Brixi and Brahmbhatt (2003) find that most of the technology-led growth in China was concentrated in a relatively small geographical area of these coastal cities (East China).

Access

Three industries were chosen for this research: manufacturing, housing development, and e-commerce. As reviewed in the literature, Porter (2001) and Fahy and Hooley (2002) have suggested that dotcoms and established companies are facing different strategic imperatives; therefore, this research was designed to include two basic groups: the internet pioneers and the internet pragmatists. These two groups form the basis for comparison in terms of e-business value creation. Meanwhile, some research (e.g. Daniel and Grimshaw, 2002) suggest that the adoption intentions and benefits realised from e-business may be expected to vary according to the industry sector. Hence, this research set out to compare companies within and across industries. Housing development and manufacturing industries are both key established industries in China while the B2C sector is the most active area in term of e-business applications. Within each industry, more than two leading companies were chosen to compare the differences and similarities within the industries.

Among these industries, the companies with strong brand names, continuously show the best performance in their industries and their active e-business applications were selected. Their websites were browsed to get information on their companies and their

main e-business applications.

It is worth pointing out the role of a pragmatic consideration in the choice of cases was accessibility.

Following the basic research on the potential companies, emails were sent out to gain access and followed up with telephone calls. It was not difficult to gain access to the case companies in the housing development industry because I had maintained good relationships with the interviewees during my research of Masters Degree. However, gaining access to leading companies in the manufacturing and B2C companies was difficult. Negotiation via telephone calls played a key role in the success; furthermore, the timing of conducting my research played a role in the success of access. As stated before, in 2004, following a few years of e-business applications, Chinese companies were at the stage of experimenting with e-business and imitating Western e-business models. In order to gain a better understanding of e-business, they were willing to share their experience and wanted to gain some valuable e-business knowledge in return.

As a result of negotiations, six companies agreed to interviews in the first stage of the data collection. An important factor in maintaining access was obtaining trust. For example, good relationships with interviewees were maintained to guarantee the second round of interviews. Meanwhile, by developing trust during the interviews, some interviewees introduced more interviewees to me. For instance, an interviewee from STE introduced to me their IT manager of the whole group as well as the system design manager of Founder. Some interviewees from the housing development industry introduced their senior managers to me as well.

The case companies list was refined during the first stage of the data collection and analysis. The re-adjustment was then based on the suggestions from the interviewees, and their opinions on the best e-business applications in other industries, plus a further literature review on related industries.

The final list of the case companies is given in **Table 6-5**.

6.2.2 Conceptual categories

In this section, detailed information is given on the conceptual categories, including tentative e-business definition, e-business technology adopter groups, products categories, and business models.

E-business definition

This research tentatively follows Zwass (1996)'s definition of e-business, namely, if a firm has carried out any of the following three categories of activities, it can be considered a potential case company.

1) Buying and selling goods and services through Internet-related technology.
2) Conducting key business activities through Internet-related technology, here key business activities refers to activities identified by the value chain.
3) Maintaining business relationships through Internet-related technology.

Internet pioneers versus Internet pragmatists

Fahy and Hooley (2002) suggest that there are two distinctive e-business technology adopter groups: Internet pioneers and Internet pragmatists. Internet pioneers are the truly visionary adopters who have seized on the opportunities afforded for reshaping industries and creating significant strategic advantages for their firms. They represent the wave of new businesses that have emerged with the growth of the Internet. Mahadevan (2000) identified three types of Internet businesses: portals, market makers and product/service providers. Many of the dot.com firms in the early burst of e-business activity fall into the category of Internet pioneers. Internet pragmatists include firms which have adopted the Internet in order to enhance existing products and processes. These are frequently labelled "bricks and clicks" operations. These are companies that were slow to join the information technology revolution and also include

those firms that are selective in their use of the Internet.

It would be interesting to explore the different or similar approaches which have been taken by the components of these two categories. Moreover, there are some industries located in the middle of these two categories—such as IT and telecom industries—who were the pioneers in terms of new technology adoption.

The allocation of companies to the categories is shown in **Table 6-5**.

Table 6-5: Internet adopter categories

Adopter categories	Industries	Companies	Core products
Internet pioneers	Online games	EGame	Online games and interactive entertainment products.
	Online-retailer	Dangdang.com	A B2C website that specializes in books, music, movies and software and has become an e-retailing since 2005.
Internet pragmatists	Housing development	Vanke, Gemdale, Vantone-Ehouse	Urban residential property.
	Manufacturing-home electrical appliances	Haier	Overall appliances, white goods, and small electric appliances.
	Manufacturing-wiring devices	TCL-Electric	Premium power switches, sockets, low-voltage electrical appliances, cable systems, and security products.
	Manufacturing-PC	Founder	PCs and computer peripherals.
	Manufacturing-telecom	STE	Telecom systems and equipment.

The e-commerce product continuum

Based on the criterion of the ability of consumers to judge the quality of a product among product categories on the Web, de Figueiredo (2000) suggests that, on the web, products can be grouped into four categories: commodity products, quasi-commodity products, 'look and feel' goods, and 'look and feel goods with variable quality' (Shown in **Figure 6-2**).

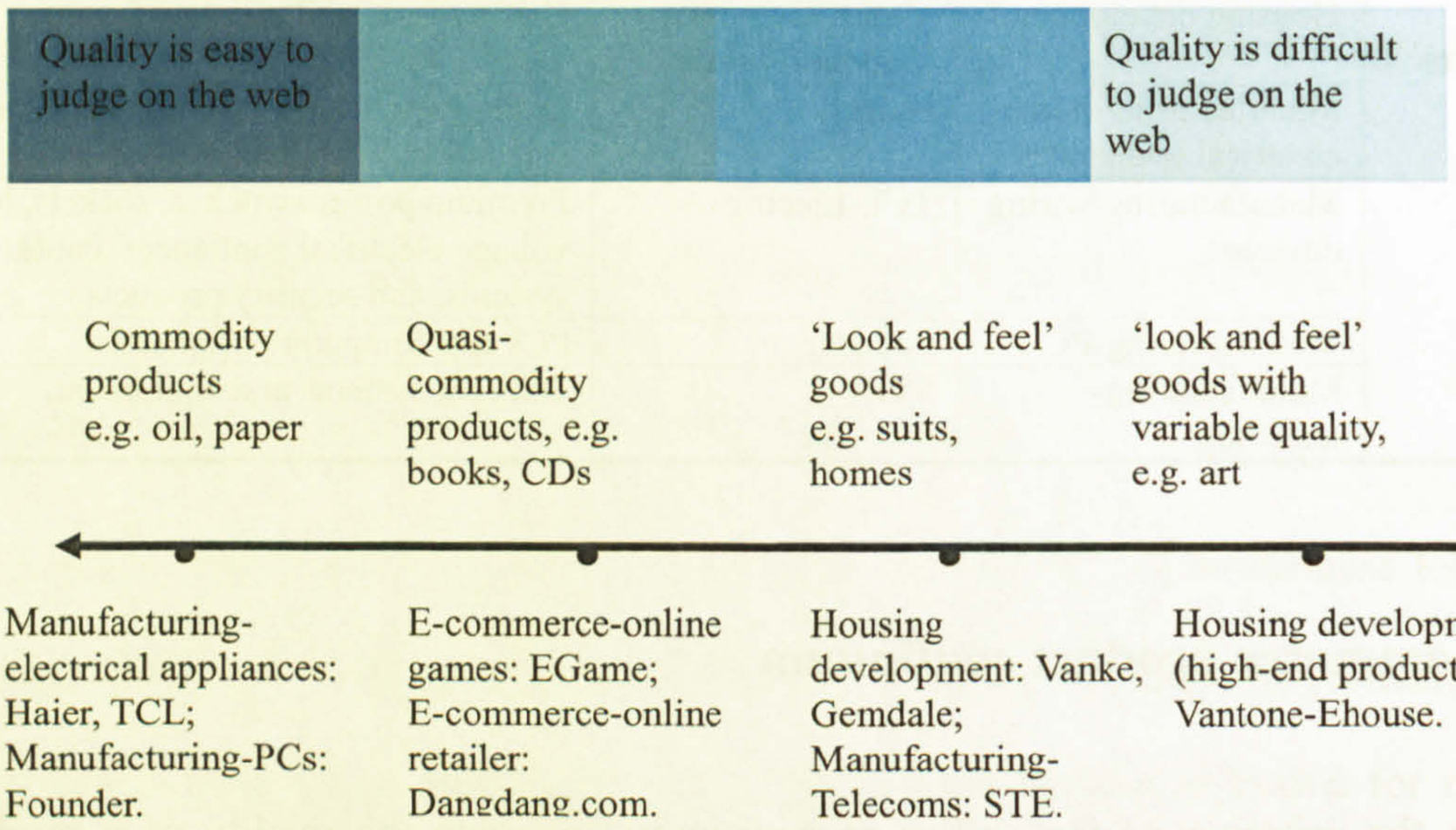
Moreover, de Figueiredo (2000) argues that the sources of competitive advantage differ across product segments, and suggests that the four-segment approach can be used to achieve optimal strategy.

Figure 6-2: The dot-com retail continuum

Source: de Figueiredo (2000), p.42.

Based on de Figueiredo's proposed categories, the sample cases can be grouped as shown in **Figure 6-3**.

Figure 6-3: Sampling—product categories



Business models

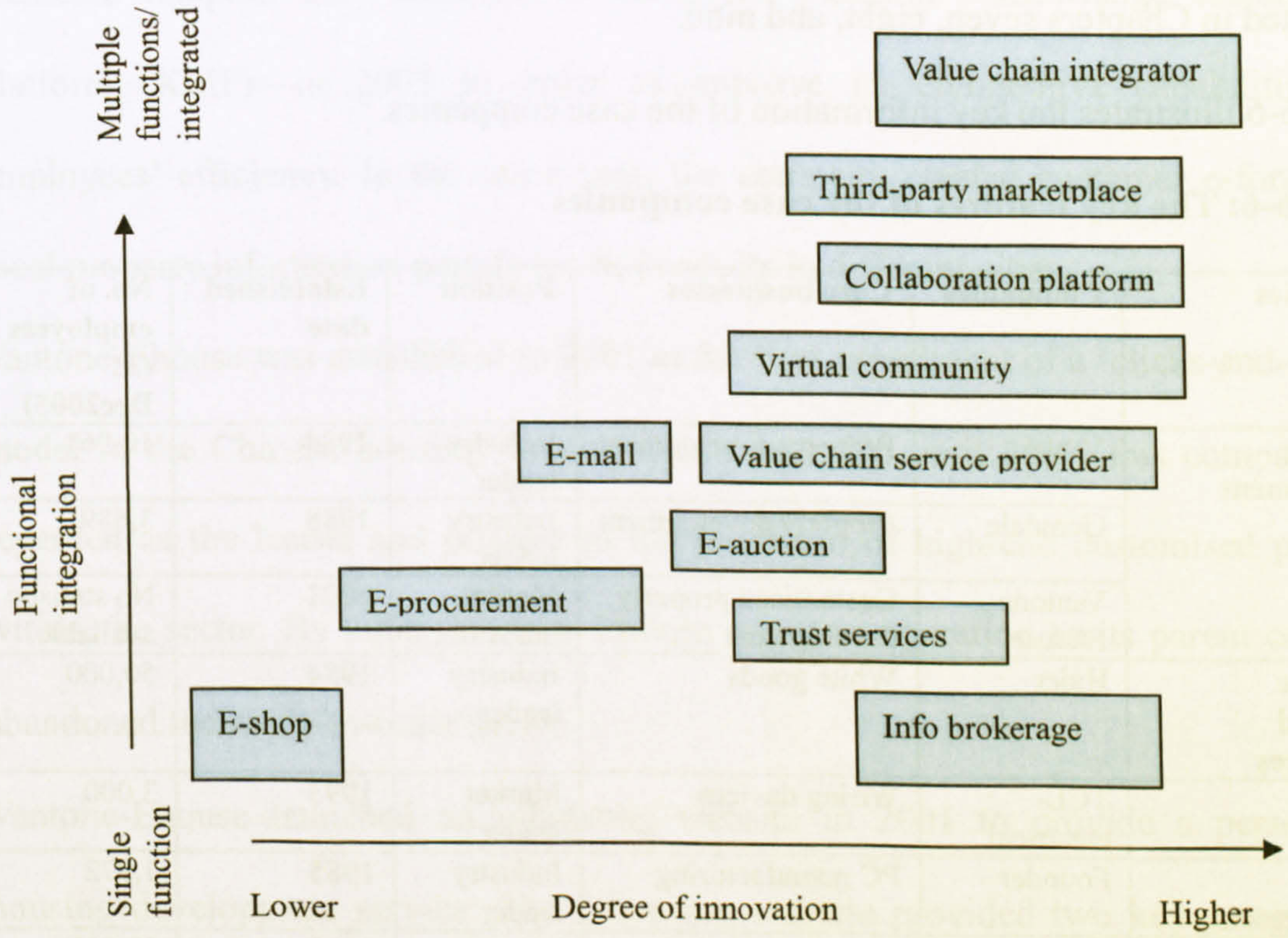
Timmers (1999) suggests that a systematic approach to identify architectures of business models can be based on value-chain deconstruction and reconstruction; that is identifying the individual value chain elements and possible ways of integrating information along the value chain.

The value chain concept needs modification in the Internet area. For example, Bollier

(1996) argues that the notion of 'chain' i.e., a liner sequence of activities might no longer hold for certain types of electronic business. In addition, value chain elements are often associated with departments within companies. In electronic business, value chain may come together in one person, rather than in one department (Timmers, 1999).

Timmers (1999) identifies eleven business models that can be found in the Internet area which is based on the basis of the degree of innovation and functional integration required. These models are e-shops, e-procurements, e-malls, e-auctions, virtual communities, collaboration platforms, third-party marketplaces, value-chain integrators, value-chain service providers, information brokerage, and trust and other services. **Figure 6-4** illustrates the Internet business models.

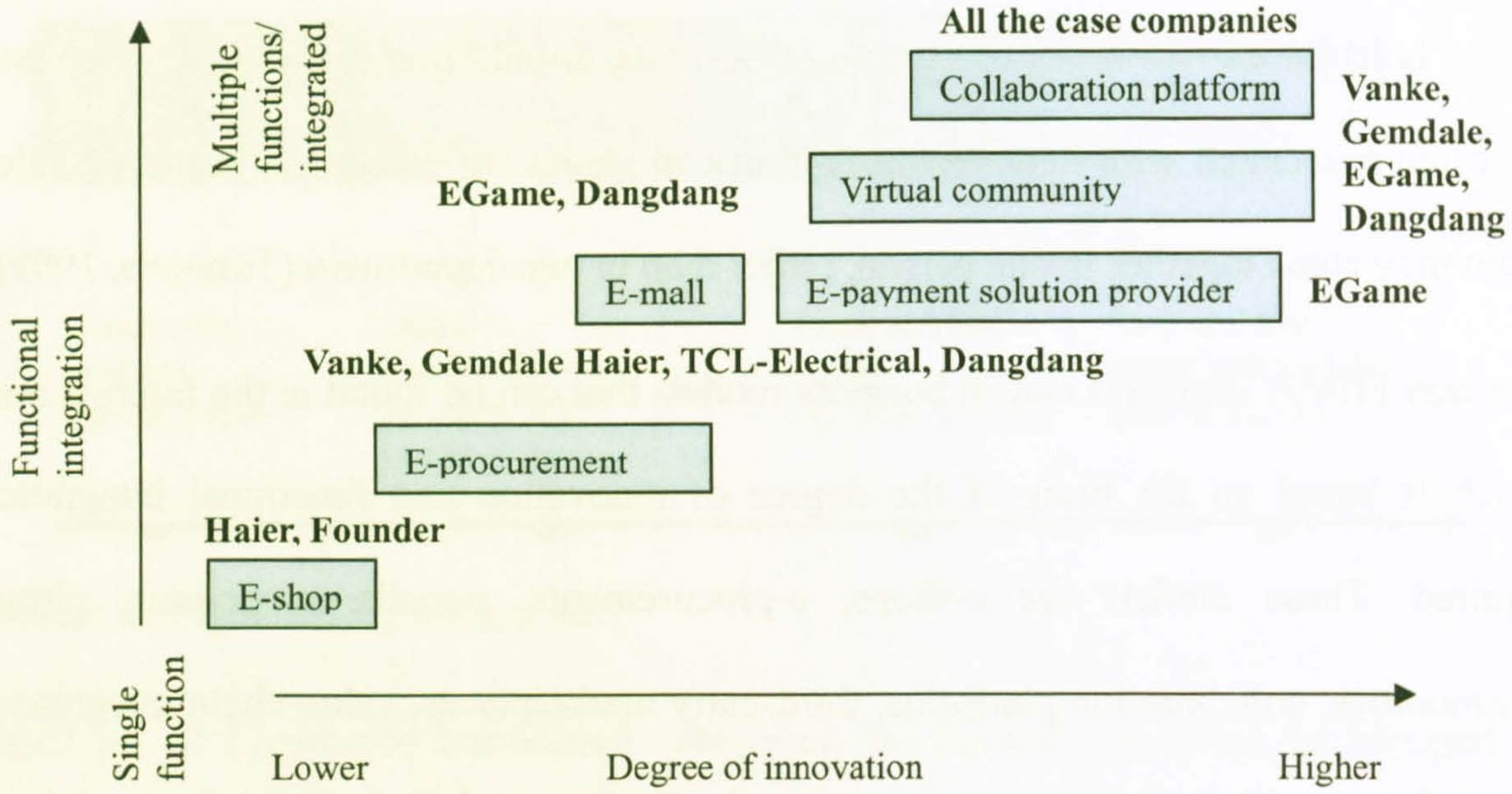
Figure 6-4: The Internet business models



Source: Timmers (1999)

Based on **Figure 6-4** and the analysis of the data collected in the first stage, the main e-business applications adopted by the case companies can be assigned to these business models (see **Figure 6-5**).

Figure 6-5: Example of Internet business models adopted by the case companies



6.2.3 Overview of the case studies

This section presents a brief overview of the nine case studies. The full case reports are presented in Chapters seven, eight, and nine.

Table 6-6 illustrates the key information of the case companies.

Table 6-6: The key features of the case companies

Industries	Companies	Core businesses	Position	Established date	No. of employees (31 Dec2005)
Housing development	Vanke	Property development	Industry leader	1984	10,961
	Gemdale	Property development	Industry leader	1988	3,689
	Vantone-Ehouse	Customised property development	Market innovator	2001	No statistic available.
M: home electrical appliances	Haier	White goods	Industry leader	1984	50,000
M:	TCL-electrical	Wiring devices	Market leader	1993	3,000
M: PC manufacturing	Founder	PC manufacturing	Industry leader	1985	1,972
M: networking hardware	STE	Tele equipment supplier	Industry leader	1993	30,811
EC: online gaming	EGame	Online games & interactive entertainment products	Industry leader	1999	2,392
EC: online retailing	Dangdang	B2C website, online retailing	Market leader	1999	No statistic available.

(M: Manufacturing; EC: e-commerce)

Established in 1984, Vanke is a leading real estate developer in China, and is the first enterprise in the industry to be awarded 'China's Famous Brand'. Property development is the company's core business.

Vanke's e-business investment began with e-procurement in 2000. Vanke was the first company in the industry to adopt e-procurement. The sales management system (or CRM system) and customer communities went online in 2006.

Founded in 1988, Gemdale is one of China's 'Top Ten Real Estate Listed Companies'. By December 2005, Gemdale had formed a comprehensive industrial structure with real estate development as primary business, as well as the synchronised development of property management services and real estate broker business.

Gemdale launched its first-version of CRM system in 2002. As the project was regarded as a failure, the second-version of the CRM system was launched in January 2005. Gemdale adopted the 'business to employee platform'—knowledge management platform (KMP)—in 2003 in order to improve its competitive capabilities and employees' efficiency. In the same year, the company created customer e-forums on local property information portals for its products in different cities.

Vantone-Ehouse was established in 2001 as the first experiment of a 'clicks-and-mortar' model in the Chinese housing development sector. Up until 2007, this company was regarded as the leader and pioneer in the provision of high-end customised products within the sector. By 2008, Vantone-Ehouse is not in operation as its parent company abandoned the made-to-order sector.

Vantone-Ehouse launched an e-housing website in 2001 to provide a personalised housing development service. The e-housing website provided two key categories of services: interactive communication and customer relationship management (CRM).

The Haier Group was founded in 1984. It is the world's fourth largest white goods manufacturer and a market leader in the Chinese home appliance industry in terms of overall appliances, white goods, and small electric appliances. Since 1993, Haier is

one of the most famous brands in China.

Haier has used e-business for procurement, sales, network management, marketing, and customer service. In the first half of 2000, Haier launched e-business projects in both B2B and B2C categories. An e-business company was established especially for that purpose.

Founded in 1993, TCL Electrical was a subsidiary of TCL Corporation, a leading Chinese manufacturer of consumer electronics. TCL Electrical was a leading Chinese manufacturer of wiring devices. The company specialised in the research and development as well as production and marketing of premium power switches, sockets, low-voltage electrical appliances, cabling systems, and security products.

TCL Electrical started constructing Internet-based networks in 1999. In TCL Electrical, e-business application has progressed rapidly in the following areas: channel management, e-procurement, enterprise information portal, and B2C.

Established in 1985, Founder is a leading Chinese personal computer (PC) manufacturer. Founder's core businesses are the design and manufacture of PCs and computer peripherals.

The B2B application, used in the conducting of business transactions with dealers, was adopted by Founder in 1999. Next, the B2B application was expanded into web-based collaborations between the company and its dealers and suppliers within the whole value chain.

Established in 1993, STE is one of the leading suppliers of telecommunications equipment in China's telecommunications market and has also gained access to the global telecommunications market.

IT has been applied along the group's whole value chain, including procurement, research and development, production, sales, after sales service i.e. CRM system, collaborative product commerce system, and ERP system.

Established at the end of 1999, EGame is a leading online game operator in China. Its

core products are online games and interactive entertainment products.

The basic e-business applications of EGame include billing systems and e-business systems. The most prominent application is the payment solution for its products. Interaction between people facilitated by the Internet is the key business concept of EGame. E-CRM is a key e-business application aiming to improve customer services and interaction.

Founded in 1999, Dangdang.com is a B2C website that specializes in books, music, and movies. Since 2005, Dangdang has classified itself as an online retailer.

E-business technologies have been applied along the whole business process, including procurement, sales, and internal management administration. E-marketing, e-procurement and channel management, and B2C delivery are the key with regard to its e-business operation.

6.3 Case analysis strategy

This section gives the approach to case analysis adopted in this thesis. The approach is influenced by four principles for producing high quality case study analysis (Yin, 1994), the grounded theory approach (Glaser and Strauss,1967; Strauss & Corbin, 1998), and the ethnographic approach (Hammersley and Atkinson, 1995).

The influences from both Yin (1994)'s work, the ethnographic approach, and the grounded theory approach have laid the foundation for the role of theory in the research design. Typically, ethnography and 'grounded theory' deliberately avoid specifying any theoretical propositions at the beginning of an inquiry. For case studies, theory development as part of the design phase is essential (Yin, 1994). Most ethnographic research has been concerned with producing descriptions and explanations of particular phenomena, or with developing theories rather than testing existing hypotheses (Hammersley and Atkinson, 1995). Glaser and Strauss (1967) have pointed to the advantages to be gained from developing theory through systematic data collection, rather than relying on 'armchair theorizing'. With grounded theory, research should be used to generate grounded theory, which 'fits' and 'works' because it is derived from the concepts and categories used by social actors themselves to interpret and organize their worlds (Jones, 1987). Yin (1994) points out that theoretical propositions about casual relations—the answers to 'how' and 'why' questions—can be extremely useful in guiding case study analysis in helping to organize the entire case study and to define alternative explanations to be examined.

In this research project, to some extent, there is commitment to the value chain framework in analyzing e-business enabled sources of competitive advantages. But at the same time, a flexible approach remains because—based on the pilot research and the literature review—it appears that this framework needs to be adapted in the e-business

business context. In the literature review chapters, some research on transforming the value chain framework with regard to its application in e-business research has been reviewed. The problem of adapting the value chain model to e-business applications has not been fully resolved. This thesis sets out to solve this problem.

The influences from both Yin (1994)'s work and an ethnographic approach and grounded theory approach have also laid the foundation for the process of data collection and analysis. What is stressed in the grounded theory's central method of 'constant comparative analysis' is the simultaneous process of data collection and analysis, and the processes and products of research shaped from the data (Charmaz, 1983). Meanwhile, the ethnographic approaches to case studies reserve a "modest stance towards existing theory and a style of analysis that interweaves data collection and theory building so that as the research progresses, the analyst successfully redefines and narrows her/his focus of study (Locke, 2001)". In contrast to the grounded theory approaches and the ethnographic approaches, Yin (1994) adopts a proceduralized approach to the analysis of qualitative research data in his building of theory. Case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes. In this sense, the goal of a case study will be to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization). Analytic generalization refers to a previously developed theory which is used as a template in order to compare the empirical results of the case study.

Combining these approaches, this research follows the iterative nature of explanation building proposed by Yin (1994), which is similar to 'constant comparative analysis' in the attitude towards existing theory. The eventual explanation is likely to be a result of a series of iterations of initial theoretical statements or propositions through repeated comparison between empirical findings and the statements or propositions.

In the next section, the procedures of the analysis are given.

6.3.1 Qualitative case study approach

Based on ethnography approach (Hammersley and Atkinson, 1995), grounded theory approach (Glaser and Strauss, 1967, Strauss and Corbin, 1998, Glaser, 1992), and case study approach (Yin, 1994), the main stages of analyzing transcripts of in-depth interviews involve the following:

1) *Attention* should be paid to interesting patterns, how the data is related to previous theories, apparent inconsistencies or contradictions among the views of different individuals and to seek relationships across various kinds of data in order to identify stable features that transcend local contexts.

2) *Identify explanatory concepts:* This could include identifying both 'sensitizing concepts' and 'definitive concepts' (Blumer, 1954). 'Sensitizing concepts' gives the user a general sense of reference and guidelines for approaching empirical instances (Blumer, 1954). Definitive concepts "refer precisely to what is common to a class of objects, by the aid of the clear definition of attributes or fixed bench marks. Where definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest direction along which to look (Blumer, 1954, p.7)". Analytical concepts could be participant terms, 'observer-identified' (Lofland, 1971), previous theories, or new terms formulated by researchers. When new categories emerge, previous coded data must be recoded to see if it contains any examples of the new codes. The ultimate aim is to reach a position where a stable set of categories is created through a systematic coding of all the data in terms of those categories.

3) *Identify central categories.* This task is to begin work on those categories which seem likely to be central to the analysis, with a view to clarifying their meaning and exploring their relations with other categories. One strategy here is the 'constant comparative method' (Glaser and Strauss, 1967). As this process develops, the mutual relationships and internal structures of categories will be more clearly

displayed. Another strategy here is 'explanation building', which involves special pattern matching. The goal here is to analyze the case study by building an explanation about the case. This method sets out to stipulate a presumed set of causal links about a phenomenon. (Yin, 1994).

4) *Build typologies.* Ethnographic approaches use the categories that have emerged from the analysis to develop more systematic typologies which in turn hold out the prospect of application to data from other situations. A very common pattern is the specification of various strategies which some category or group of actors adopt, or could adopt, to deal with a problem that they face routinely. A typology encourages the researcher to think seriously and systematically about the nature of each category and its relationship with others (Hammersley and Atkinson, 1995). Grounded theory approach links the key variables into a more holistic theory as patterns between concepts emerge (Easterby-Smith, et al, 2001). The case study approach entails cross-case synthesis. One possibility is to create word tables that display the data from the individual cases according to a uniform framework. Now the analysis can start to probe the similarities shared by cases and to propose the 'types' of general case, and moreover, subgroups or categories of general cases or even a typology of individual cases that can be highly insightful (Yin, 1994).

5) *Re-evaluation.* The first draft is re-written, taking into account the criticisms made and contradictions highlighted.

6.3.2 Specific techniques for analyzing

An explanation of the analysis techniques adopted in this research is given as follows:

Pattern search and pattern match

Both techniques have been used in this research. Pattern match is one of the most

desirable techniques for case study analysis (Yin, 1994). It compares an empirically based pattern with a predicted one (or with several alternative predictions) (Trochim, 1989). Pattern search is the foundation of identifying and building concepts and categories, which is used in the ethnographic approach (Hammersley and Atkinson, 1995) and the grounded theory approach (Glaser and Strauss, 1967, Strauss and Corbin, 1998, Glaser, 1992).

Explanation building: categorizes and conceptualize

In an ethnographic approach, analytical concepts could be participant terms, 'observer-identified' (Lofland, 1971), or new terms formulated by researchers (so-called 'sensitizing concepts'. In a case study approach, categories or concepts are derived from presumed propositions or previous theories (so called 'definitive concepts'). For example, the explanations may have reflected some theoretically significant propositions such as critical insights into previous theory. As a result, the propositions can lead to major contributions to theory building.

6.3.3 Format of reporting case studies

This thesis will follow the format of multiple-case reports, and thus contain multiple narratives, presented as separate chapters about each industrial sector of the cases. In addition to these individual industrial sector narratives, the report will also contain a chapter covering cross-case analysis and results.

As suggested by the environmental based view (the value chain model) and empirical e-business research (e.g. Daniel and Grimshaw, 2002), industrial factors may influence e-business value creation. Hence, the case reports are structured around organisations to identity industrial factors and then across industrial factors in e-business value creation. This structure helps to addresses research question 3 - "Are there differences between

firms in the same sector/between sectors in the use of e-business?" As a result, the analysis led to achieving research objective 7 – "to discover industrial factors in the use of e-business". Finally, this research can make a contribution to knowledge by providing industry-specific insights into e-business applications.

6.4 Summary of the chapter

This research locates in the philosophical tradition of social constructionism. This epistemological position suggests the use of qualitative methods, which underpins the understanding of meaning. The lack of solid prior theorizing about the topic or subject makes the inductive case study approach an appropriate choice of methodology (Eisenhardt, 1989).

Data collection was carried out in two stages. This took place in 2004 and 2005 respectively. The case companies were located in three industries, namely manufacturing, housing development, and e-commerce. In both data collection stages, the same case study protocol was followed.

Among nine case companies, nineteen interviews were carried out with different managers. Most of the interviewees were managers responsible for e-business or information system management. Other interviewees included general managers. All the interviews were in-depth, semi-structured, face-to-face interviews.

Following the suggestions given by Yin (1994), the research design was based on multiple cases and multiple evidences, thereby allowing construct validity; which will follow pattern matching and explanation-building to deal with internal validity. It will be seen to rely on analytical generalization rather than statistic generalization to deal with external validity; which will follow explicit, systematic methods of qualitative analysis to allow reliability.

Potential cases should meet the following requirements: Firstly, the cases should have actively applied e-business in their respective industry. Secondly, the cases should fit the conceptual categories of e-business applications, which were formulated during the literature review process. These conceptual categories include Zwass (1996)'s definition of e-business, Internet pioneers and Internet pragmatists, the e-commerce product continuum, Timmers (1999)'s business models, Third, the cases were selected from

three specific industrial sectors in economically prosperous areas in Mainland China: the Yangtze River Delta, Pearl River Delta, Bohai Rim region and the national capital Beijing.

The influences from both Yin's (1994) work and an ethnographic approach and grounded theory approach have laid the foundation for the role of theory in the research design as well as the process of data collection and analysis. In this research project, to some extent, there is commitment to the value chain framework and its application in analyzing a company's sources of competitive advantages. But at the same time, a flexible approach remains because—based on the pilot research and the literature review—it is obvious that this framework needs to be adapted to examine e-business' contribution to the sources of competitive advantage.

The main stages of analyzing transcripts of in-depth interviews involve the following: pattern search, identifying explanatory concepts, identifying central categories, building typologies, and re-evaluation.

CHAPTER 6: RESEARCH METHDOLOGY

CHAPTER 7 CASE REPORT: THE HOUSING DEVELOPMENT INDUSTRY

The chapter reports on the key e-business applications and their contribution to value creation in the housing development industry. Three case companies are reported: China Vanke Co., Ltd, Gemdale Corporation, and Beijing Vantone New-conception Integrated Homes Co., Ltd.

7.1China Vanke Co., Ltd

7.1.1 Company background

Established in 1984, Vanke is a leading real estate developer in China, and is one of the earliest listed companies in Mainland China. After ten years of professional transformation (from 2001 onwards), Vanke has firmly positioned itself as an urban residential property developer. Housing development is the company's core business. Vanke's businesses focus lies within three economic zones: the Pearl River Delta, the Yangtze River Delta and the Bohai-rim region. In 2005, Vanke became the first enterprise in the Chinese property industry to be awarded 'China's Famous Brand'.

From 1991 to 2004, Vanke's revenue and net profit had been growing at a compound annual growth rate of 25% and 31% respectively (Vanke, 2005). In 2005, it realised a revenue and net profit of RMB¥ 9,921 million and RMB¥ 1,365 million respectively, representing increases of 36.7% and 56.1% respectively compared with those of the previous year. On 31 December 2005, Vanke had 10,961 employees (Vanke, 2006). In recent years, Vanke has kept up this rapid expansion. On 31 December 2009, Vanke had 17,616 employees. And in 2009, it realized a revenue and net profit of RMB¥46,047million and RMB¥ 6,430million respectively.(Vanke, 2010)

To improve operational efficiency, since the year 2000, the company has employed the

process of streamlining and redefining its business flow along the value chain. This includes such activities as planning and design, construction, property management, and customer services.

Project construction is contracted out to construction companies by means of tenders. Consequently, most of the building materials are supplied by construction companies. The products which the company directly procures from suppliers include mechanical and electrical equipments and external or internal decoration materials. Such equipment and materials are purchased through centralised procurement via the Internet.

In 2005, the company implemented centralised management of its property portfolio in sixteen cities across the country and consolidated over seventy 'property management offices' under a 'property service centre'. This then promoted the principle of 'service orientation' to the company's 200,000 customers. (Vanke, 2006)

Between 2006 and 2015, Vanke's goal was to establish itself as a world-class property developer. The following instructions have been implemented to achieve this goal (Vanke, 2006):

To establish a customer-oriented business model. The aim here is to have a strong understanding of their customers and an accurate segmentation strategy in which to identify target customers. By understanding the needs of their customers at various stages of their lives, the company hopes to maintain life-long loyalty from these customers.

To shift their operational model to 'resource integration oriented'. The aim here is to achieve better economies of scale, higher efficiency and be more flexible in collaboration with business partners.

To establish a new organisational structure to support their continual rapid development. Their new organisational structure will comprise a strategy formulation and management headquarters, regional centres with specialised functions, and front-line offices that can carry out plans and strategies in a flexible manner. Such a structure

is aimed at achieving the combination of visionary, flexible, decentralised and disciplined management.

To establish a risk management system that matches up to rapid business development.

In Vanke, the e-business adoption is motivated by three interrelated categories of aims:

To improve operational efficiency. The first objective is to utilise e-business as a platform to operate management and procurement functions. *"The main reason is the requirements from procurement. Meanwhile the upsurge of e-commerce in the year 2000 prompted us to try to use e-commerce to increase efficiency.* (Vanke1, Visit1)" *"Up until 2002, the purchase of house decoration materials and equipment accounted for 30 percent of Vanke's total procurement. This proportion would increase accompanying the industrialization process of the industry.* (Vanke2, Visit1)" The second objective is to build a unified communication platform in order to share information among different functional departments at headquarters whose function is a management decision-making centre. Since 2000, Vanke has restructured itself from an enterprise with diversified businesses into a professional real estate developer. Consequently, the function of their headquarters has evolved from an investment decision-making centre into a management decision-making centre which is composed of several functional departments: e.g. design, sales, and customer service. The company feels that it is necessary and important to share information amongst these departments. The interviewees explained the motivations of adopting e-business as follows.

To follow the trend of management practice. "Influenced by the upsurge of e-commerce in 2000, the senior management in Vanke thought it was better to explore e-business as early as possible and it was better to be a leader in the industry in terms of e-business applications." (Vanke2, Visit1)

To meet customer requirements. "Some customers, for example the high-end or young customers, hope that we can provide online property management and customer services. Some examples of these operations have been adopted by our Hong Kong

counterparts." (Vanke1, Visit1)

As leaders in a traditional industry, the senior managers of Vanke became concerned with the effects of e-business on their company. For example they attempted to understand:

1) The difference between the new economy and the traditional economy.
2) The specific features of the new economy.
3) How the new economy could be integrated with the traditional economy.

Vanke3 described senior management's concerns as follows:

> *Senior managers were concerned with one key question: "How can the new economy be integrated with the traditional economy?" In the industry, there is a well-accepted assumption that e-business, to some extent, will promote the development of traditional enterprises. Therefore, the senior management thought that they could not ignore e-business. However, the key problem is their not knowing exactly how to deal with e-business.* (Vanke3, Visit2)

In response, the first thing they did was to establish their own understanding of e-business phenomenon. The chairman of Vanke spent six months of the year 2000 in 'Silicon Valley', California, USA, in order to understand the difference between the new economy and traditional economy.

At Vanke, the understanding of e-business has progressed because of certain practices. In the beginning, their basic understanding was that e-business represented a platform which integrated all management functions within the company. For example, Vanke1 commented:

> *E-business is basically a tool or a platform to integrate all the management functions.* (Vanke1, Visit1)

After one year of e-business adoption, it became apparent that the important issues of a successful e-business adoption consisted of such things as website interface design, organisational structure, marketing directions, and a secure knowledge of e-business.

Up until 2003, there was no generally accepted definition of e-business within the corporation. Nor was there a clear answer to the relationship between the e-business and its prior IT applications. However, specific features of e-business as an integration platform could be summarised as follows:

> *Compared with prior IT applications, e-business is a more open platform with better customer accessibility and less limitation. Meanwhile, e-business is utilised to build relationships with suppliers and buyers.* (Vanke3, Visit2)

By 2005, the IT manager at the company's headquarters had acquired a clear understanding of e-business:

> *The essence of e-business applications is to connect with business partners and build relationships with business partners, which include suppliers and customers.* (Vanke5, Visit4).

7.1.2 Main e-business applications

The B2B application: e-procurement

Vanke's e-business investment began with e-procurement in 2000. Vanke was the first company in the industry to adopt e-procurement. An e-commerce company was established for this implementation. The initial aim of e-procurement was the utilization of a joint procurement platform for the members of China Urban Realty Association (CURA), whose members are the leading Chinese real estate developers. However, this aim proved difficult to achieve mainly because of the outdated IT applications of suppliers and the lack of support from members of CURA. These companies were concerned with information confidentiality. Consequently, Vanke established an e-procurement website which was then refined to become an internal procurement platform with which to facilitate the centralised procurement of equipment and house decoration materials.

After a period of experimentation, the company began to look for theoretical instructions. This is mainly because they did not feel confident with their practices. Some practices did not develop as they expected. For example, for two continuous years, they had used the same suppliers. In the third year, it was felt that other suppliers might not want to attend the bid. Also, the staff at the procurement department realised that it might be better if e-procurement was only applied to certain materials rather than all materials. Subsequently, the company decided to gain some experience from Siemens and HP's e-business application in centralised procurement.

Up until 2003, four types of business activities had been applied, or considered with regard to this website:

- verifying supplier qualification;
- managing bidding processes;
- managing the implementation of contracts;
- managing materials supply, inspection, and payments.

However, up until 2004, only the process of information communication had been set up online.

Since 2005, Vanke has required its subsidiaries to utilise this platform in order to purchase materials or to manage the information of procurement, which has, in turn, led to the improvement of management transparency and better control of the subsidiaries' expenditure. Vanke5 described e-procurement's function on managing subsidiaries:

> *Since 2005, Vanke has required its subsidiaries to utilise an e-procurement platform. Even though the subsidiaries may have reached the agreements with suppliers offline, they have to input the results into the e-procurement system. This platform led to the improvement of management transparency and better control of the subsidiaries' expenditure. As an enterprise with operations at a national scale, this platform has played an important role in controlling subsidiaries' expenditure on procurement.* (Vanke5, Visit4)

Since 2005, the e-procurement platform has been managed in the following way:

The subsidiaries use the platform to procure materials.

The headquarters is responsible for three types of management:

1) To supervise and control its subsidiaries' procurement activities;
2) To purchase commonly used materials on the yearly basis on the whole corporation scale;
3) To provide technical support and maintain the platform.

In addition, Vanke has built up strategic partnerships with suppliers in order to reduce the cost of materials. To further cut the cost of materials, Vanke hopes to increase the proportion of construction materials purchased via their website, thus reducing the proportion of outsourcing with regard to the procurement of construction materials. Vanke5 gives the details on these:

> *Up till 2005, the materials purchased from Vanke's e-procurement website only account for a small proportion of total construction costs. The construction materials can be divided into two types: materials provided by the contract constructors and materials provided by the real estate developers. Currently, Vanke outsources the construction tasks, including purchasing construction materials, to constructors. In the future, Vanke plans to operate the procurement task in-house. The construction company will be mainly responsible for building houses.* (Vanke5, Visit4)
>
> *Moreover, Vanke plans to build strategic partnerships with suppliers. As a result, Vanke will know the cost structure of its suppliers' products. Hence, both companies can collaborate in order to reduce the cost of products.* (Vanke5, Visit4)

The B2C application: customer relationship management (CRM) system

Vanke has established e-forums for its customers and the staff. The senior management regard these forums as a valuable channel to get information from its staff and customers. Its customers' e-forums are divided based on geographic regions such as different cities. (Vanke5, Visit4)

The sales management system (or CRM system), which managed customer data and complaints, as well as customer communities, went online in 2006.

The company divided CRM into four areas: planning design, project management, sales management, and after-sales service. Since 2005, the customer relation department has engaged in the whole process of property development project in order to provide supervision from a customer perspective.

Automate and streamline internal administration management

The applications include the use of information systems in order to manage finances, human resources, and internal communication. In 2004, the company increased communication channels (i.e. Intranet, BBS) between senior management and regular staff.

Nonetheless, its office automation, which was initiated in 1996, did not fully realise its functions until 2004.

7.1.3 The challenges of e-business application

In order to utilise e-business as an integration platform, it became apparent that the key challenge was to find an ideal management model on which Vanke could redefine its value chain and standardise its management model. At this point the company was seen to have some difficulties with the realisation of standardisation mainly because of the

disparity of property development across regions.

> *It was difficult to standardise the business process within Vanke because of the localisation feature of property development within the company.* (Vanke5, Visit4)

Another large hurdle became apparent with their attempting to integrate the information systems adopted by different functional departments.

> *It was found to be more practical to implement e-business in each functional department. This, however, led to the difficulty of system integration. Standardisation is the foundation of integrating e-business with business operations. Only when unified codes are adopted within the whole of the corporation can data input and business operations be carried out simultaneously. For example, up until July 2003, employees in each department filled in contracts according to their own department requirements. As a result, the information was not so useful to other departments.* (Vanke3, Visit2)

Between 2003 and 2004, little progress was made in e-business applications because of the lack of collaboration among departments and the lack of an e-business strategy.

7.1.4 E-business' impact

Vanke's competitive advantages

Although Vanke is the leader in the industry, its senior management could not reach a consensus about the sources of the company's core competitive advantages. One view was that there appeared to be no significant difference among the leading companies within the industry. Another view was that the company seemed to have distinct advantages in operational efficiency and marketing. This operational efficiency was derived from organisational structure and corporate governance, as well as software applications. The third view was that the company's core competency consisted of their

capability to correctly predict the trend of market development. This derived from two factors: the understanding of customer needs and senior executives' correct assumptions of the development plan of cities. The company gained good understanding of its customers through employing professional marketing research companies and the information provided by its own market department. Prior to 2003, e-business did not make any contribution to this area within the company.

E-business' impacts on competitive advantages

E-business application has not directly contributed to Vanke's advantages in marketing but has contributed to the improvement of the company's operational efficiency. For example, e-procurement can be seen to be making a distinct contribution to cost saving, cost control on subsidiaries' expenditure, and timely information management in the procurement process. Information efficiency has a direct impact on employee self-education, the standardisation of procurement operation, and the improvement of Vanke's bargaining power over its suppliers.

However, e-procurement is not the sole contributory factor in cost-cutting, as Vanke3 expressed:

> *Whether the purchase price could be decreased depends on two factors: the extent of intensive market competition and employees' knowledge on the materials.* (Vanke3, Visit2)

E-business can also be held responsible for the facilitation of and the implementation of new management concept. For example, e-procurement facilitated the application of centralised procurement. E-business applications have played and will continue to play a vital role in the company's expansion strategy. By extending its operations into multiple provinces, Vanke should then be able to lower the overall risk of 'industry life cycle' in the property market because each province might have its own property development life cycle. Vanke5 described e-business' contribution to Vanke's business

expansion strategy:

> *To successfully manage business expansion, a key practice is to effectively copy the management style, business processes and the culture of the headquarters or the successful subsidiaries. E-business is a method of standardising the company's internal business processes among subsidiaries. Based on standardisation, Vanke can in a better position to copy its successful business models into different subsidiaries.* (Vanke5, Visit4)

E-business' impact on organisational structure and the industry

E-business applications have not led to the change of the organisational structure of Vanke, but have certainly facilitated the implementation of its new organisational structure—a decentralised organisational structure—by providing an efficient communication channel. Moreover, the e-business applications have influenced other companies within the industry. For example, many competitors visit Vanke's customer e-complaint forum. However, these applications should not pose any threat to the company's competitors because e-business is only one of the many management tools.

The company's e-procurement application has been seen to have made quite an impact on suppliers. Many suppliers have adapted to the company's e-procurement platform, which in turn has also improved their credibility. As a result, a noticeable improvement has occurred within the business procurement environment.

Nonetheless, e-business plays no vital role in the industrial structure because it is not held to be a key success factor in the industry.

7.1.5 Vanke's e-business strategy

The formulation process

The formulation of Vanke's e-business strategy can be divided into three stages:

1) Vanke consulted with global pioneers in e-business applications. For example, in

August 2002, some senior managers visited Siemens to learn their methods of utilising e-business with regard to supply chain management. They also visited Siemens' ERP platform. The senior managers gained knowledge of e-business by observing the practices of some global leading companies.

2) Vanke invited these leading companies to provide training, which was then integrated with Vanke's local knowledge.

3) Based on the aforementioned knowledge, Vanke was then able to formulate its e-business strategy.

E-business strategy

Between 2002 and 2005, there was consistency in Vanke's e-business strategy:

- The company was active in exploring e-business but lacking a unified e-business strategy. "*We had IT plans rather than strategies. These plans were not explicitly integrated with our corporate strategy and organizational structure.* (Vanke5, Visit4)"
- The main direction was to build a co-operation platform for collaboration with business partners. "*The key business operation of a real estate developer is to integrate and allocate industrial resources. We have a large number of business partners. Hence, the IT department's function is to build a platform to support the co-operations between Vanke and its business partners. The focus is not on 'commerce' or 'transactions' but on co-operations and communication with our business partners.* (Vanke1, Visit1)" Vanke5 expressed a similar view: "*as a property developer, our business processes are information intensive. Vanke does not operate these processes directly. We contracted out these business processes to business partners.* (Vanke5, Visit4)"

The IT infrastructure of the industry itself has largely influenced e-business applications within the industry as well as having an impact on Vanke's e-business strategy. For

example, although e-business has the potential to be used in many areas within the industry, it has only been used in a few areas because of the weak industrial IT infrastructure. On the practical side, Vanke5 suggested that e-business could be used in the following areas within the industry:

1) To build a co-operation platform to support collaborations with business partners.
2) To build an online customer service platform.
3) Both of the aforementioned applications to be based on a central system which integrates all the sub-systems. Vanke started this project in 2005. After establishing a central system, Vanke will be then able to provide online customer services.

7.2 Gemdale Corporation (Gemdale)

7.2.1Company background

Gemdale was founded in 1988 and entered the real estate business in 1993. In April 2001, Gemdale went public on the Shanghai Stock Exchange. In the 1990s, the transformation of the company's shareholder structure was completed.

Ranked as one of China's 'Top Ten Real Estate Listed Companies', Gemdale's progress was rapid. By December 2005, Gemdale owned a number of holding subsidiaries, RMB¥ 6,607 million total assets, RMB¥ 2,744 million net assets, and had formed a comprehensive industrial structure with real estate development as primary business, as well as the synchronised development of property management services and real estate broker business. (Gemdale, 2007)

In 2005, it realised a net profit of RMB¥ 320 million, representing an increase of 30.1% respectively compared with that of the previous year. On 31 December 2005, Gemdale had 3,698 employees (Gemdale, 2006). Inspired by the vision of growing into the most valuable real estate developer in china, Gemdale has experienced rapid expansion in recent years. In 2009, it realized a net profit of RMB¥1,776 million. And on 31 December 2009, Gemdale had 6,958 employees, almost double compared to 2005 (Gemdale, 2010).

Since 2000, the company has implemented a national expansion strategy with Shanghai, Shenzhen and Beijing as centres of east China, south China and north China respectively. Accompanying the expansion strategy, the company has redefined its organisational structure to centralised management, their headquarters controlling the management of senior managers, key business processes and business strategy of the subsidiaries.

Up until 2003, Gemdale1 did not appear to have a clear understanding of e-business:

> *E-business must include online transactions. Based on this, e-business*

> *application is not so important for a real estate developer. Within Gemdale, an important application is a knowledge management system. There is some doubt about whether this application belongs to e-business applications.* (Gemdale1, Visit1)

However, at this stage, the company did not regard the definition of e-business as an important issue:

> *The key issue here was the utilisation of e-business in order to solve management problems. However, it was felt that it was important to reach a consensus among employees as to their understanding of e-business because the lack of it could lead to problems with regard to e-business adoption.* (Gemdale2, Visit3)

By 2004, Gemdale1 had a clearer view of the e-business concept. This came about as a direct consequence of having communication with the IT managers of their direct competitors such as Vanke:

> *E-business is mainly utilised to manage customers and business partners. Up until 2004, Gemdale has not really explored this area.* (Gemdale1, Visit2)

In 2005, there existed several categories of understanding of e-business within the company (Gemdale2, Visit3):

- The senior management believed e-business to be the future direction and that e-business applications would make a viable contribution to Gemdale's national geographic expansion strategy and building core competitive advantages. However, at this time they did not appear to be very knowledgeable in the use of e-business.
- Middle-level managers at the headquarters and the managers in the subsidiaries did not have a clear understanding of e-business. They held the adoption of e-business to be unnecessary non-urgent strategy within the company and felt that its adoption could be a burden.

For example, Gemdale3, a senior manager, explained his view on the e-business

concept:

> *In Chinese industry, the term 'information management' is better accepted than "e-business". This is because the concept of e-business appears too narrow when it only refers to transaction-based operations. E-business should refer to applications in a company's whole value chain, including managing suppliers, internal enterprise administration, and customers. The aim of e-business application within Gemdale is to facilitate electronic information flow. In practice, this includes moving the process-based operations, data and information online (e.g. logistic flow, information flow, and capital flow).* (Gemdale3, Visit3)

7.2.2Main e-business applications

The B2C application: customer e-forum

In 2003, Gemdale had customer e-forums in local property information portals for its products in different cities. Gemdale regarded these forums as a good communication channel although it could not facilitate interaction with customers. As a company who provides quality products, Gemdale believed that discussions among customers would contribute to its sales. Meanwhile, the company made use of customers' opinions in order to evaluate the performance of the subsidiaries.

The B2C application: CRM

Within Gemdale, the aim of implementing CRM is to realise the concept of customer-centric management and to enrich its brand name.

Information with regard to customer complaints and requirements, which are obtained from various communication channels, are then combined through the CRM system. This information then flows to relevant employees in order to answer customer's

questions and consequently solve any problems that may have arisen from these questions. According to Gemdale's e-business plan in 2005, the CRM system would include customer membership clubs or customer communities. Currently, its online customer service centre provides three types of services:

- A Gemdale membership club, namely 'A Happy Home', offers its members discounts to affiliated commercial companies and membership activities.
- Property management services to its customers include domestic services and Gemdale club services.
- An online customer feedback form is provided for customers to give their suggestions conveniently.

By applying the CRM system, Gemdale expected to achieve the following benefits:

- To improve the quality of customer data while at the same time reducing the cost of managing this data.
- To realise real time information flow of customer data within functional departments.
- To attain a flat organisational structure. This is possible because the application facilitates the effective interaction between functional departments (e.g. marketing, sales, and customer services) and customers.

Gemdale launched its first-version of CRM system in 2002. As noted in Chapter 6, the project was regarded as a failure for the following reasons:

- The customer service system and the sales system were not integrated. As a result, information could not be shared between these two systems on a timely basis.
- Collaborations were lacking between the IT department and the business operational departments.
- Resistance arose from employees as a direct result of the lack of proper training and the lack of integration between the IT application and business processes.
- The management of the project was not seen to be very professional.
- The system was a made-to-order product supplied by an IT service provider. The

technology was not mature. This provider had financial problems later.

The second-version of the CRM system was launched in January 2005. Although it was too early to evaluate its full influence, the system did gain better acceptance by the employees in the sales department. Since 2005, the sales system, which was standardised among the subsidiaries in 2005, and the customer service system have been integrated into the CRM system.

The B2E (business to employee) application: knowledge management platform

Gemdale adopted the 'business to employee platform'—knowledge management platform (KMP)—in 2003 in order to improve its competitive capabilities and employees' efficiency.

The KMP is utilised to exchange information, manage files and organise net-meetings. It is designed as a portal through which all the internal systems are linked. The key feature of the application is to help employees to conveniently access relevant information. As a result, employees' capability is improved.

> *The KMP is the most important e-business application if it can be called as e-business application. And it is our core competency.* (Gemdale1, Visit1)

Through the KMP application, the following benefits and functions have been attained:

- Improvement of quality of information which in turn lowered the cost of managing information.
- The deployment of an employee self-education channel, through which employees learn knowledge of operating business processes.
- Improvement of operational efficiency thus reducing duplication and sharing working experience.
- Facilitation of innovation by sharing opinions on new project development.
- Utilisation as a communication channel between Gemdale and architecture design

companies.

However, Gemdale's experiment with KMP did not go smoothly. For example, some leaders questioned KMP's function as a collaboration platform. The application requires employees to stay online and some employees could misuse this by taking the opportunity to do other things online rather than working. So, to reap the benefits of the KMP application, Gemdale needed to solve some key issues (Gemdale2, Visit3):

- Paying attention to the quality and the quantity of the information uploaded.
- Being clear on the role definition of the KM manager.
- Being selective on which systems to be included in the KMP.
- Ensuring that Gemdale's culture is compatible with KMP application.

Automate and streamline internal administration management

Gemdale is researching the possibility of e-procurement. They have implemented a procurement system to manage suppliers' information so that they can know the suppliers, the price of the products, and the transaction time and period of validity of the contacts. This system is for internal use only and has not been connected to the Internet. In 2005, the company carried out research on centralised procurement. In 2006, an online bidding system was launched to manage strategic procurement of materials and the selection of design companies. Currently, the company has an e-procurement website for purchasing materials across regions or locally. Gemdale evaluates its suppliers according to four categories—first choice, possible choice, limited use, and not use. The results of evaluations publish online each year. And Gemdale will build strategic partnerships with suppliers who have been awarded as 'first choice' for two continuous years.

Office automation, which covers expenses reimbursement, financial systems, etc., was adopted for electrical administrative management.

Within Gemdale, IT has not been used in the process of production i.e. architecture

design and building construction.

7.2.3 The challenges of e-business applications

Within Gemdale, the main obstruction of e-business application was the lack of motivation because senior management were unable to reach a consensus on the understanding of e-business. The lack of basic understanding of e-business by some senior managers led to the following (Gemdale2, Visit3):

- The inability to recognise the importance of e-business.
- The ignoring of the fact that there should be interaction between e-business applications and business processes, organisational structure, and the management systems. This led to repetition of system applications.

7.2.4 E-business' impact

No consensus was achieved among senior management about the sources of competitive advantage of the company. The following sources of competitive advantage were mentioned:

> *We are doing better than average in every stage of the value chain. Our comprehensive management skill is on the upper-middle level in the industry. KM could be a source of competitive advantage because human resources are a key success factor in property development industry* (Gemdale1, Visit2).

> *Local government support and our design capability gave us advantages in brand name, products, and sales plans. Basically, e-business did not contribute to these* (Gemdale2, Visit3).

> *The fundamental source of competitive advantage derived from the healthy shareholder structure, which have brought about healthy internal management*

structure. The ownership structure, employee responsibility, power, and profits were clearly defined. Good governance structure is a common source of competitive advantage across industrial sectors. In Chinese real estate industry, e-business is only a tool rather than a value creator (Gemdale3, Visit3).

7.2.5 Gemdale's e-business strategy

Between 2002 and 2004, Gemdale did not have e-business or IT strategy. But they did have some focus of practice. For example:

- the building of a central system.
- the building of an internal portal to manage its business partners.
- the building of an online customer service centre so that they can build strong interaction with customers.

With their limited resources, they then chose to achieve these aims step by step.

In 2005, Gemdale started to develop an e-business strategy. The new strategy would take into consideration organisational structure and technological plans, with the aim of implementing e-business along the whole value chain. Moreover, this strategy would benefit by being integrated with Gemdale's corporate strategy. For example, the CEO of the company would audit the strategy. Gemdale needed to build a solid IT architecture to accommodate enterprise growth. Then, it became advantageous to the company to integrate previously separate systems and to add more applications such as management plan system, HRM system, as well as updating their financial system.

7.3 Beijing Vantone New-conception Integrated Homes Co., Ltd. (Vantone-Ehouse)

7.3.1Company background

Vantone-Ehouse (www.ehousing.com.cn) was established in 2001 as the first experiment of a 'clicks-and-mortar' model in the Chinese real estate development sector. Its objective was to become a 'Dell Computer' in the Chinese property development market. Up until 2007, Vantone-Ehouse was regarded as the leader and pioneer in the provision of customized (or made-to-order) products. The company had four categories of constructions for high-end customers: single-detached houses, public buildings, ecological parks and urban construction. Vantone-Ehouse had successfully carried out projects in several major cities e.g. Beijing, Shanghai, and Qingdao.

Vantone-Ehouse's parent company is Beijing Vantone Real Estate Co. Ltd (Beijing Vantone), which became established in 1993 as one of the largest Chinese private property developers in terms of registered capital. By 31st December 2005, the total assets of the Corporation were RMB¥ 3, 952 million (Vantone, 2007).

Beijing Vantone follows a differentiation strategy. It is regarded as being well positioned in the high-end resident property market. Its residential projects are mainly located in the Beijing and Tianjin regions. Beijing Vantone regards its capability for innovation, learning and forward-looking as the sources of its competitive advantages.

As an innovator in the real estate industry, Beijing Vantone has initiated and advocated the transition from the 'Hong Kong Model' to the 'American Model'—from a comprehensive real estate developer (vertical integration) to a professional real estate investor (value chain integrator). Based on the 'American Model', between years 2002 and 2007, Beijing Vantone's investment concentrates on three sectors: residential property development, commercial property, and made-to-order services (which were operated by Vantone-Ehouse). Since 2008, Beijing Vantone has abandoned the made-to-

order sector. Consequently, Vantone-Ehouse is not in operation.

Beijing Vantone went to public by the end of 2006 on the Shanghai Stock Exchange. After years of development, in 2009, it realized a revenue and net profit of RMB¥2,463million and RMB¥ 274million respectively. On 31 December 2009, Beijing Vantone had 113 employees (Vantone, 2010).

In Vantone-Ehouse, e-business was adopted in order to reduce the high cost of interactive communication with customers. The interaction with customers plays a vital role in providing personalised products. An overview of e-business application in Vantone-Ehouse was given by Vantone3:

> *Real e-business should begin with the provision of online interactive house design and communication. In Vantone-Ehouse, e-business can be seen to be sub-divided into four applications: (1) Categorising customer needs based on their preference of locations, design styles and investment budget. This process combines online and offline operations. (2) Interacting with customers regarding house design. Through the website, customers can design their houses online. (3) Managing the production process, which is operated by a CRM system. (4) Linking e-business system with Beijing Vantone's customer 'whole life cycle' management system.* (Vantone3, Visit3)

Vanke2 explained the basic role of e-business in Vantone-Ehouse:

> *Enterprise information systems rather than 'e-business' is a more accurate term to describe the company's applications. E-business can be applied in two areas: transaction-based and service-based operations. Online transaction is not realistic within the industry because customers do not appear to be prepared. E-business is regarded as a tool rather than a profit-generator in Vantone-Ehouse. In this sense, we are not a pure e-commerce company.* (Vantone2, Visit3)

7.3.2 Main e-business applications

The B2C application: the e-housing website

Vantone-Ehouse launched an e-housing website, www.ehousing.com.cn, in 2001 to provide a personalised service of housing development. They chose land from one of Beijing Vantone's famous projects in order to carry out this experiment. Six sample houses were built and off-line shops were established for the exhibitions.

Prior to 2004, Vantone-Ehouse had revised its website six times in order to accommodate customer needs. Initially, Vantone-Ehouse wanted to move the whole process of property development online. With the implementation of this, they found it difficult to provide a fully personalised service. For example, online property transaction was not readily accepted by customers. Nonetheless, the company went ahead and operated some business processes online. For example, they obtained customer orders as well being able to recognise their customers' personalised needs. Thus, the online operation supported and influenced offline operation.

The e-house website provided two key categories of services: interactive communication and customer relationship management (CRM). Details of these two applications are given in the below.

An interactive communication channel

Since 2004, Vantone-Ehouse has focused on solving the problem of communication between the company and its business partners. This takes into account customers and design companies in different cities. Their solution was to build an Internet based platform and to add service contents into it—for example the Net-meeting system.

The network was utilised to decrease communication costs and to obtain business information. In 2004, Vantone-Ehouse launched a communication system for the operation of marketing activities. This included the provision of design options as well as obtaining customer requirements and cultivating customer needs. This

communication system, which included the marketing and sales system together with the CRM system, became the main focus of the company's e-business application in 2005.

By building a brand name of made-to-order houses, Vantone-Ehouse wanted to attain 'first-mover advantages'.

The CRM system

In 2005, the Chinese government re-adjusted the policies within the real estate industry. Some restraints were imposed to prevent property bubbles. But the customised housing developing section progressed quite well, especially in the form of group-based individuals investing together to build a community. In 2005, in response to this market change, Vantone-Ehouse divided its businesses into two categories:

1) Focusing on high-end individuals who had been their main customers in the past.
2) Focusing on group-based customers, such groups were composed of people on the scale of around 200 to 300 individuals with middle-level incomes. Communication was needed within the group and at the same time the exchange of opinions on house plans with service providers was encouraged. Consequently, Vantone-Ehouse's website needed to be upgraded in order to meet these communication requirements.

The expansion of a customer base was the biggest change within the company between the years 2004 and 2005. Subsequently, the focus of e-business applications moved from marketing activities to customer service activities or CRM, which centred on providing a multi-channel communication platform to jointly manage house projects with customers. The high cost of communication between project companies and customers made it necessary to adopt a CRM platform. Another reason for adopting the CRM platform was to meet customer requirements. Customers needed a better and smoother communication platform. Offline communication was incapable of

simultaneously dealing with the communication of projects across regions.

The CRM system was divided into two main types: one for handling order requirements, and the other for managing project development processes. These were then sub-categorised into stage-based processes. Vantone applied its CRM platform to several projects. Customers were found to like this system:

> *For example, corporate customers regarded the use of the CRM system as an opportunity to learn a new management style. This platform provided group-based individuals with a variety of management functions.* (Vantone2, Visit3)

In each stage of house construction, Vantone took photos on the construction sites and transformed the photos and plans into 3-D models so that its customers could view the process of their house construction online at anytime any place. If they had questions to ask, they could call the company's call centre to discuss any concerns with their own customer managers.

> *This is how Vantone-Ehouse was able to transform the traditional house production process by the use of e-business. Previously, customers could only view houses once when they were completed. With the new system, customers were able to view the whole construction process and to voice their suggestions at any time. As a result, customer risk was reduced. Moreover, the earlier we can let customers become involved in the different stages of product design, the better quality of service we can provide to those customers.* (Vantone3, Visit3)

The CRM system within Vantone-Ehouse was connected to the customer data centre of its parent company. This link enabled the parent—Beijing Vantone—to exploit the concept of the whole life cycle value of houses, which included security systems, house maintenance, and environmental protection. When customers buy houses from Vantone-Ehouse, they automatically benefit from Beijing Vantone's customer service system which then provides 'whole life cycle' service to those customers' houses.

System integration

Since 2003, Vantone has been building up an integrated platform in order to deal with data obtained from different departments.

7.3.3 The challenges of e-business applications

Customer acceptance was mentioned as a main constraint by Vantone3.

> *Customer acceptance of e-business applications at a high level, such as using the Internet to manage business information flow, was dependant on a socio-economic context, which included the acceptance of e-business in the whole of society and the establishment of a credit system for e-business transactions.*
>
> (Vantone3, Visit3)

Government policies on land supply are regarded as a main constraint in terms of building a community for group-based customers or building luxury single-detached houses. Up till 2009, none of customized communities for group-based customers has been successfully built up as the Chinese government has clearly stated that it did not support this model of property development.

The bottleneck of building personalized luxury houses is the Chinese government's policies on land supply and urban design control. Individuals only have 70 years of land use rights. Hence, customers are generally not willing to invest a large amount of money to build a luxury home. Moreover, any small changes in the architecture design have to be approved by the Urban Plan Department. The cost of communication and approval is very high. Therefore, Vanke-Ehouse's main customers are organisations, who want to build customised headquarters, schools or innovation and research centres.(Chen, 2006, Ma, 2006, Wang, 2009)

During the process of implementing e-business within Vatone-Ehouse, in 2005, the biggest administrative challenge within the company was the management of businesses

on a nation-wide basis with standard high product quality because of the obvious socio-economic development disparity among regions.

The main constraint on implementing the CRM system was technical. Many personalised needs were seen to be too complicated to accomplish with regard to the technical perspective. Moreover, not many software companies were willing to design a CRM system to meet Vantone-Ehouse's special purpose because the market for this system is very small.

7.3.4 E-business' impact

Vantone-Ehouse's competitive advantages

Fundamentally, Vantone-Ehouse's competitive advantages derive from its distinctive business model, which provides personalised houses for high-end customers. No other companies other than Vantone-Ehouse have adopted a similar business model within the industry. Adoption of this business model has enabled Vantone-Ehouse to redefine its business processes within the industry value chain. This advantage was seen to be reflected in product differentiation. Other advantages came from the association between the company and its customers. For example, their customers tend to possess large resources and have significant social influences.

E-business' impacts

In Vantone-Ehouse, e-business is looked upon as a strategic tool of providing made-to-order service.

> *In 2000, accompanying the upsurge of e-business, we wanted to regard e-business as a core business. Later, we found that e-business could be defined as a tool with which to transform traditional business rather than as a core business in its own right* (Vantone3, Visit3).

Through direct contact with property investors as well as end customers, Vantone-

Ehouse was able to gain a deep understanding of customer needs and could then develop real estate projects based on customer orders. Consequently, the high risk of real estate development could be reduced.

At business operational level, e-business applications had influences in the following areas: It...

- Changed the communication interface between customers and service providers which then resulted in greater transparency of business operations.
- Met customer's personalised needs to the most feasible extent through customer involvement in the business processes.
- Promoted internal management efficiency, which had a big impact on the reorganisation of internal business processes.
- Reshaped industrial structure through the improvement of product circulation.

E-business applications also brought about the following benefits:

- Extending of customer base and improvement of customer services.
- Contributing to the high profit margins of the made-to-order model.
- Making internal management more effective by viewing problems from new perspectives.

E-business applications also had impacts on the organisational structure and the industrial structure. For example, the function of the IT department was different after e-business adoption. So was the way of dealing with information flow. Other companies could be seen to regard their websites simply as an information portal or a marketing tool. Hence, the information flow was static. Within Vantone, information flow continued to run in the form of online interaction with customers. "*This whole process is too complicated to easily be imitated by other companies* (Vantone3, Visit3)".

7.3.5 Vantone's e-business strategy

Applying e-business was one of the reasons that Vantone-Ehouse was built. Initially, the CEO of the parent company wanted Vantone-Ehouse to go public independently. It was because of this concept that Vantone-Ehouse set up its website. Up until 2005, Vantone-Ehouse had operated under the concept of becoming a public company. However, by 2005, Vantone-Ehouse did not explicitly propose an e-business strategy. Nonetheless, they had a direction, which was to fully realise the previously applied key e-business applications.

During the e-business implementation process, Vantone-Ehouse first instigated an integrated e-business plan which they then developed in detail within different functional departments. For example, Vantone-Ehouse once regarded e-business as an ERP process which needed to be done step by step. Subsequently, they adopted OA, functional systems, and the ERP system using this step by step process. At that point, Vantone-Ehouse regarded e-business as only a single part of the enterprise information system management.

7.4 The comparison of the case companies

7.4.1The understanding of the e-business concept

There are three main concepts which can be used to describe e-business applications within the case companies: 'the new economy', 'information management', and 'information system management' (See Table 7-1). One aspect in particular of 'e-business' was avoided—the B2C-oriented transaction. It was unanimously agreed that the B2C transaction was unrealistic within the industry because of this lack of customer acceptance.

The case companies all regarded e-business as a positive future direction of management. However, as the industry has been continuously enjoying high profit margins, the leading companies such as Vanke and Gemdale do not feel the urgency to adopt e-business (see Table7-1, key assumptions). Nonetheless, they were interested in ways of utilising e-business, especially in order to improve their operational efficiency. Vantone-Ehouse took a different approach: they implemented e-business as a key component of its differentiation strategy.

The case companies share similarities in terms of their understanding of e-business:

- E-business is utilised "*to connect with business partners and build relationships with business partners, including suppliers and customers* (Vanke5, visit4)" "*to manage customers and business partners* (Gemdale1, Visit2)" (See Table 7-1). Within Vantone-Ehouse, e-business is an important tool to facilitate interactive communication with customers. The concept of 'formulating cooperative relations' has been advocated for a long time. For example, Porter (1985, 1998, p.20) states the benefits of the application as follows: "forging cooperative relations with suppliers can lower input costs and improve input quality". Accompanying e-business, this concept has been pervasively adopted.

In the process of understanding e-business, Vanke and Gemdale share some key

concerns (see Table 7-1):

- A consensus on the understanding of e-business was not reached among the employees. As a result, employees and middle/lower level managers were unaware of the urgency to adopt e-business.

Table 7-1: The understanding of the e-business concept

	Vanke	Gemdale	Vantone-Ehouse
Key concepts	The new economy	Information management	Information system management
Key assumpt-ions	1) E-business could not be ignored; 2) The success of e-business applications relates to: website interface design, organisational structure, marketing directions, and knowledge of e-business.	1) It is important to reach a consensus on the understanding of e-business; 2) E-business is a direction of future management; e-business could contribute to expansion strategy & core competitive advantage (opinions of senior management); 3) E-business adoption is not necessary or urgent; can even be a burden (opinions of middle-level managers).	1) Transaction based e-business is unrealistic in the industry as customers are not prepared; 2) E-business is a tool rather than profit-generator.
Key features	1) E-business is a tool or a platform to integrate management functions; 2) To connect and build relationships with business partners, which include suppliers and customers.	1)Knowledge management system is an important application; 2) To manage customers and business partners; 3) To apply e-business within the value chain; 4) To facilitate electronic information flow.	E-business is utilised in service-based operations, i.e. interactive communication with customers and inspection of the production process.
Key concerns	1) The way of integrating new economy with traditional economy; 2) The distinct features of e-business compared with its prior IT applications.	1) The way of utilising e-business; 2) To reach a consensus on e-business implementation.	1) Customer acceptance of e-business; 2) E-business technology's capability in solving the complexity of the reality.

7.4.2 The reasons for e-business adoption

Table 7-2 illustrates the reasons for e-business adoption with regard to the case companies. Four categories were found:

- To enhance operational efficiency or to improve employee efficiency (within Vanke and Gemdale). Within Vanke, the areas of improvement focus on procurement and internal communication platform. Within Gemdale, these concentrate on building up online information flow.
- To facilitate the company's unique strategic positioning and to reshape existing

industrial structure (within Vantone-Ehouse). E-business provides a cost-effective way of interactive communication with customers. Moreover, by cooperating with customers at the early stage of house development project, the risk is decreased significantly for both customers and developers.

- To follow the trend of management practice, i.e. the upsurge of e-commerce.
- To update customer requirements, i.e. the provision of online property management.

In order to enhance operational efficiency, the realisation of online information flow was regarded as a key issue. Online information flow was also seen as a tool with which to manage business expansion across the regions.

Cost reduction in business operation became a common theme shared by Vanke and Vantone-Ehouse. Within Vanke, this was attained through e-procurement. Within Vantone-Ehouse it was realised through online interactive communication with customers and business partners.

Table 7-2: The reasons for e-business adoption

	Vanke	Gemdale	Vantone-Ehouse
Key Categories	1) To increase efficiency; 2) To follow the trend of management practice; 3) To meet customer requirements.	1) To utilise e-business to solve management problems; 2) To improve employees' efficiency.	E-business was utilised as a strategic tool to provide high-end customers with personalised services.
Key applications	1) Utilised as a platform for operation management and procurement functions; 2) Utilised as a unified communication platform in order to share information; 3) To provide online property management and customer services.	1) To move the process-based operations, data and information online; 2) To realise electronic information flow.	1) To reduce the high costs of interactive communication with customers; 2) The real-time interaction with customers plays a vital role in reducing the high risk of property development.

7.4.3 Key e-business applications

Although they only had 1% of the national market share in 2005, Vanke had clearly established itself as a leader in urban residential property development sector. Its next vision was to become a world-class property developer in response to globalisation. Its

goal was to transform itself into a customer-oriented company and define itself as a resource integrator with great flexibility and agility of coordinating with business partners. Vanke continues to improve its operational efficiency and cost structure. Moreover, Vanke is decentralising its organisational structure in order to support this strategic transformation. The new organisational structure consists of a strategic decision-making headquarters, autonomous regional centres, and executive front-line offices.

E-business applications provide support to Vanke's aforementioned strategic transformation in the following ways:

First, e-procurement has been utilised to realise the concept of 'centralised procurement'. The e-procurement was adopted firstly to purchase mechanical and electrical equipment and decorating materials. The company is planning to expand the scope of e-procurement into construction materials, which had previously been provided by builders. E-procurement has contributed to cost-reduction as well as to the efficiency of information flow. The cost reduction has been achieved through three approaches: (a) the application of centralised purchase has increased the volume of buy, hence, improved Vanke's bargaining power over suppliers; (b) Vanke has built up strategic partnerships with suppliers; (c) The headquarters has used the e-procurement system to control its subsidiaries' procurement activities.

Secondly, the use of e-business as collaboration platforms has enabled Vanke to have the flexibility to integrate resources within the industrial value chain.

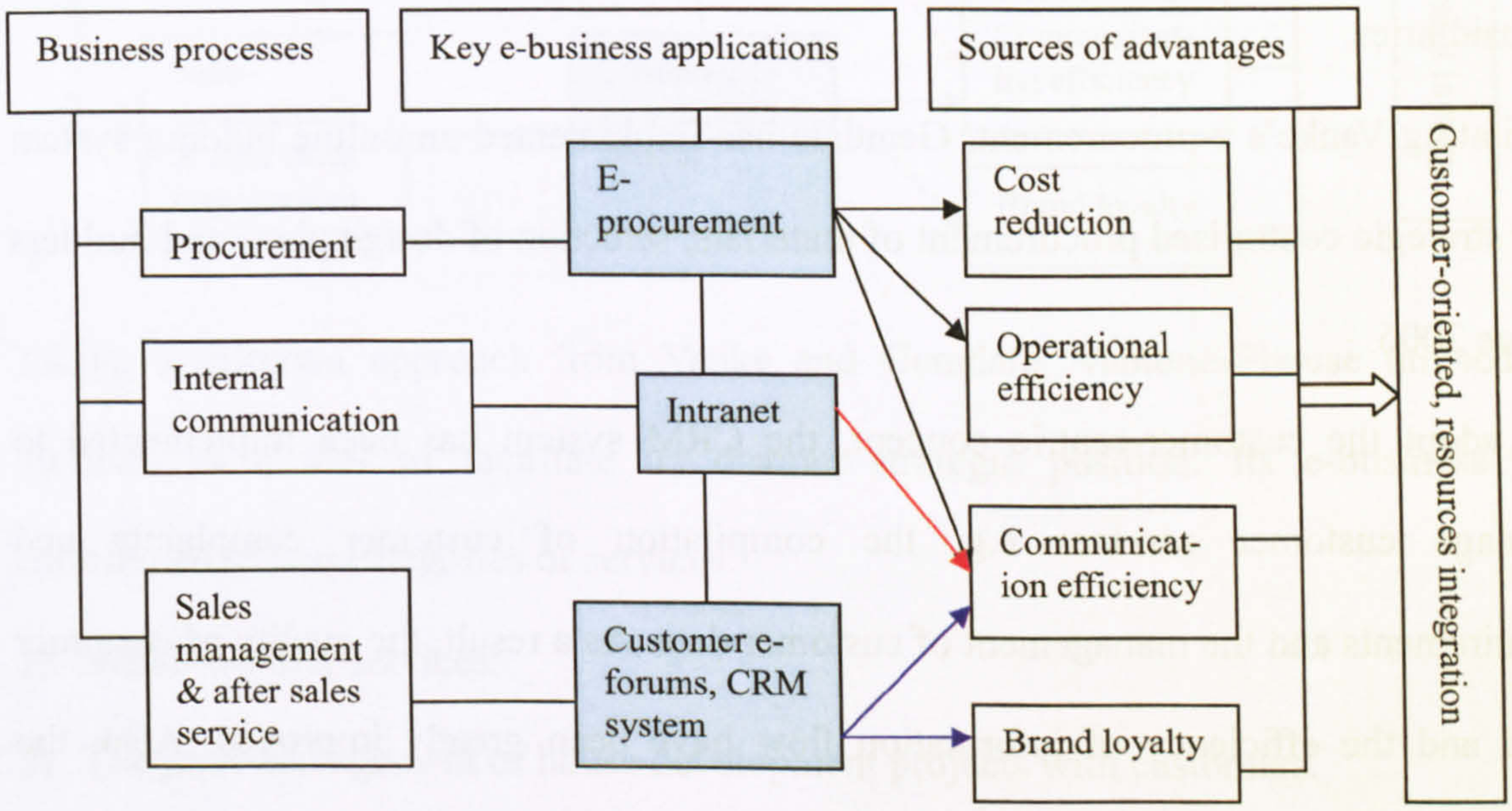
Thirdly, through its CRM system, Vanke can implement customer-oriented business models under effective cost control. The customer relationship team participates in the whole process of property development in order to bring a customer perspective into the property development.

Finally, through its Intranet, an internal communication channel has been improved, which in turn facilitates more opinion exchanges between senior management and

regular staff. Meanwhile, the timely information flow between the headquarters and the subsidiaries facilitates Vanke's decentralised organisational structure and national expansion strategy.

Figure 7-1 summarises the aforementioned key e-business applications and their related advantages within Vanke.

Figure 7-1: Key e-business applications and their related sources of advantages within Vanke



Gemdale regards Vanke as its role model within the industry. However, instead of beginning its e-business experiment with e-procurement like Vanke, Gemdale's experiment began with a 'knowledge management platform' (KMP) as they believed that the improvement of employees' efficiency and capability to be the major source of competitive advantage. KMP functions as an internal enterprise information portal, which in turn manages three categories of internal activities:

1) The exchange of information, working experience, and opinions on project development between subsidiaries;
2) The management of files and net-meetings;
3) The management of communication between Gemdale and design companies.

The application of KMP has indeed improved employees' efficiency. This is due mainly

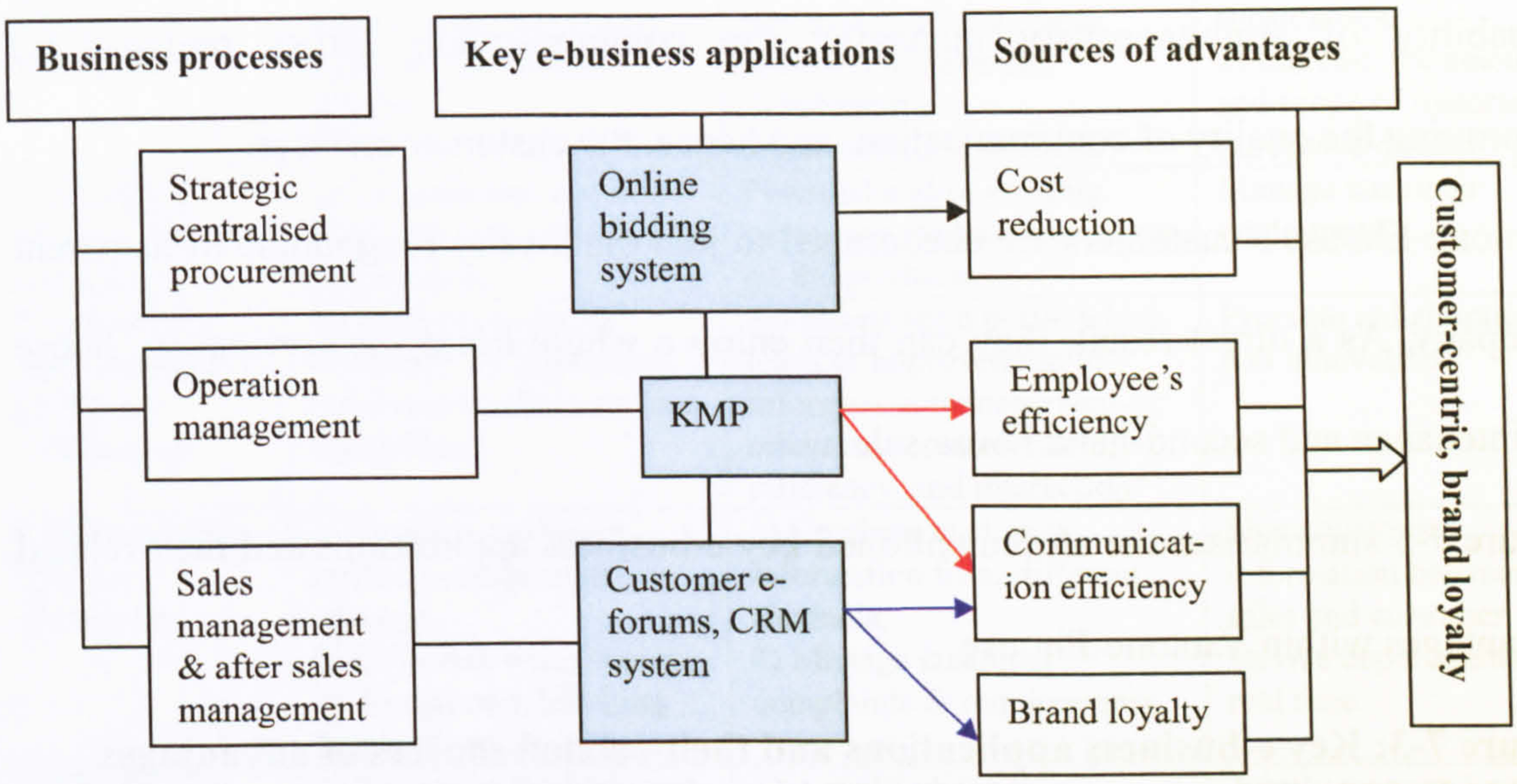
to shared experience and the convenience of online self-education. However, the application did face the challenge of controlling the quality of the uploaded information. Accompanying the implementation of KMP, Gemdale also assigned staff to analyse information from its customer e-forums, which operated via the local property information portals. Gemdale regarded these forums as a channel by which they could get to know customers' opinions on the company's projects. Customer opinions also provided a perspective for the headquarters to evaluate the performance of its subsidiaries.

Imitating Vanke's e-procurement, Gemdale has implemented an online bidding system for strategic centralised procurement of materials, selection of design plans and builders since 2006.

To adopt the customer-centric concept, the CRM system has been implemented to manage customer services e.g. the compilation of customer complaints and requirements and the management of customer data. As a result, the quality of customer data and the efficiency of information flow have been greatly improved. Also, the information from the sales system and the customer service system has been integrated thus equipping employees in both departments with the relevant information to effectively interact with customers.

Figure 7-2 illustrates the aforementioned key e-business applications and their related advantages within Gemdale.

Figure 7-2: Key e-business applications and their related sources of advantages within Gemdale



Taking a different approach from Vanke and Gemdale, Vantone-Ehouse utilised e-business as a tool to facilitate its distinct strategic position. Its e-business has contributed to two categories of services:

1) Made-to-order services;

2) The joint management of house development projects with customers.

Its e-house website is an interactive communication channel to link Vantone-Ehouse with its customers and business partners. This rich information garnered through communication now helps Vantone-Ehouse to gain insight on their customers. The e-house website has been used to organise net-meetings, to collect business information, and to manage marketing activities. The system that is applied to manage marketing activities is integrated with the CRM system. Accompany the growth of customer needs, between 2004 and 2005, the focus of Vantone-Ehouse's e-business applications has moved from marketing activities to CRM.

Through its CRM system, Vantone-Ehouse allows its customers to supervise house design and production process. The main aim is to improve the transparency of the production process, and hence, lower customer's risks.

The CRM system provides a multi-channel communication between project companies

and customers, so that customers can jointly manage house projects. The application has achieved three benefits: (a) lowering the cost of communication; (b) facilitating the capability of simultaneously managing the communication across regions; (c) improving the quality of communication, and hence, the customer services.

Vantone-Ehouse's customers are encouraged to join the loyalty programme of its parent company. As a direct result, they can then enjoy a whole life cycle service e.g. house maintenance and second-hand house sale.

Figure 7-3 summarises the aforementioned key e-business applications and their related advantages within Vantone-Ehouse.

Figure 7-3: Key e-business applications and their related sources of advantages within Vantone-Ehouse

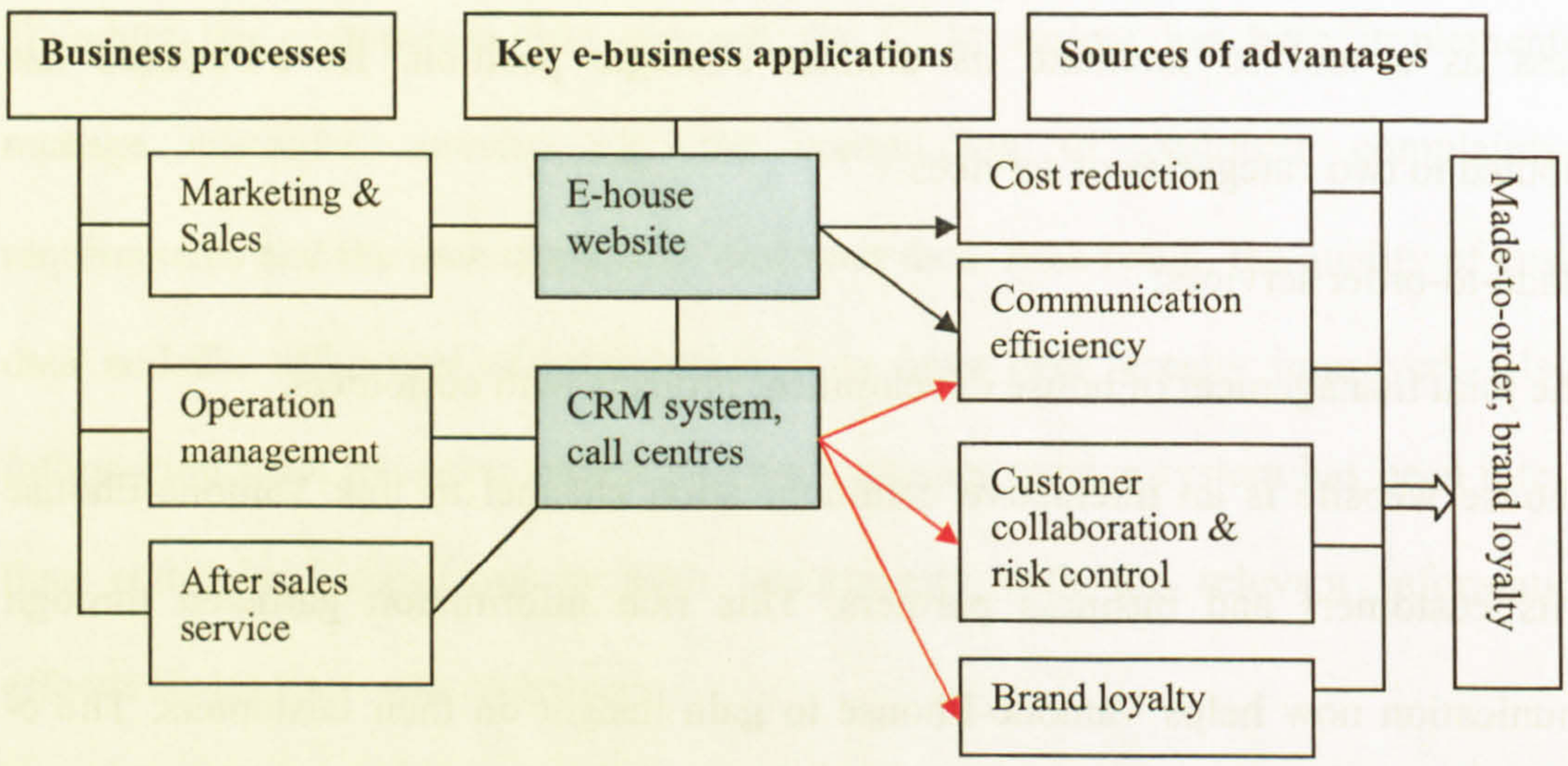


Table 7-3 summarises the aforementioned key e-business applications adopted by the case companies within the housing development industry.

Table 7-3: Key e-business applications in the companies

	Aims & Objectives	Primary applications	Advanced applications
E-procurement (adopted by Vanke, Gemdale)	As a centralised procurement platform in order to reduce cost and improve operational efficiency.	1) Internal procurement platform for centralised purchasing of non-basic production materials; 2) Information communication channel.	1) Manage & control purchase in the subsidiaries; 2) Increase the amount and scope of materials purchased online.
Customer e-forums (Vanke, Gemdale)	To get customer opinions on products & subsidiary's performance.	Potential and/or existing customers exchange opinions on the products.	Manage customer community.
Knowledge management platform (Gemdale)	To build competitive advantage by improving employee's efficiency and capabilities.	An information portal which leads to improvement in information management in: relevancy, cost-effective, efficiency, and interaction.	Promote collaboration and innovation.
CRM system (Vanke, Gemdale)	1) To apply customer-centric management concept; 2) To enrich brand name; 3) To maintain life-long loyalty from customers.	1) Combine customer information from different channels; 2) Manage customer complaints & requirements;	Share customer information between sales and customer service departments in real time.
CRM system (Vantone)	1) To reduce the high cost & to improve the quality of interactive communication; 2) To simultaneously manage projects across different regions.	1) A multi-channel communication platform; 2) Manage orders and customer relationships.	Jointly manage house projects with customers.
E-housing website (Vantone)	1) To provide made-to-order service; 2) To manage marketing activities.	An interactive communication channel with customers and business partners.	Integrate with the CRM system.

Looking at Table 7-1 and Figures 7-1, 2, 3, the following key similarities shared by the case companies can be identified:

These three case companies have headed a new trend of management within the industry e.g. customer-orientation and CRM in order to achieve customer life-long loyalty and gain competitive advantage in a more intensive competitive environment. Consequently, they all have put efforts into e-CRM. Within Vanke and Gemdale, their CRM systems have been put into operation to gain customer insights and to manage customer communities and customer services. The CRM system is always connected with sales systems to improve the efficiency of both departments. Exploring the CRM system further, Vantone-Ehouse has made good use of this with regard to inviting its customers to co-design houses and co-inspect the production processes. Ultimately, Vantone-Ehouse's CRM system greatly contributes to its differentiation and

personalisation strategy.

The adoption of a CRM system has achieved two common benefits: service quality improvement, which strengthens brand loyalty, and improvement in communication efficiency cost-effectively. Within Vantone-Ehouse other benefits have been achieved i.e. collaboration with customers and the provision of high quality products and personalised services.

Another common application with regard to facilitating the industry change is the use of the Internet for Web-based collaboration platforms. This helps with the formation of partnerships with design companies and/or material suppliers. Within Vanke, the e-procurement is applied as a collaboration platform; within Gemdale the KMP serves the aim; within Vantone-Ehouse the CRM system is used to achieve the function.

Four sources of competitive advantages facilitated by e-business emerge: cost reduction, operational efficiency (mainly through collaboration within organisations and between business partners or customers), communication efficiency and brand loyalty.

At the same time, a key difference has emerged in these cases:

Each of the case companies has its own focus of e-business application. Within Vanke, it is e-procurement. The aim is to save the cost of procurement. Where Gemdale, is concerned, it is KM system which is employed to improve staff's working efficiency. With Vantone, e-business was untilised as a tool to facilitate made-to-order model and distinct strategic position. This was achieved through online interactive communication and CRM systems.

7.4.4 The challenges of e-business adoption

By analysing the case companies, the following five categories of obstacles to e-business application can be identified (See Table 7-4):

- The difficulty of standardising business operations across regions. Both Vanke and

Vantone-Ehouse met the challenge of standardising their management models across regions. This was due mainly to the disparity of the levels of property development. Another hurdle of standardisation was the lack of collaboration among departments. The necessary authority was lacking in encouraging the relevant departments to coordinate.

- The difficulty of integrating previous systems. Both Vanke and Gemdale believed that it was realistic to implement information systems in different functional department on a step-by-step basis. However, as a direct result, they faced the obstacle of legacy systems.
- The lack of consensus among senior management with regard to the necessity and significance of e-business adoption within Gemdale resulted in repetition of system adoptions.
- Customer acceptance of e-business application at a deep level was a main constraint when taking into account Vantone-Ehouse's made-to-order model. The improvement depended on the e-readiness of business environment and the socio-economic development in China.
- The technical constraint of the CRM system with regard to dealing with the complexity of business requirements became very apparent with its implementation by Vantone-Ehouse.

Additionally, government policies on bank loans and land supply have played an important role in the industry; especially the land supply system has not provided a suitable environment for a made-to-order model.

Table 7-4 summarises the obstructions of e-business applications within the industry.

Table 7-4: The obstructions of e-business applications with in residential development industry

Types of challenges	Details of the challenges
The difficulty of standardising business operations across regions.	This derives from the disparity of the levels of property development across regions (Vanke & Vantone-Ehouse).
The difficulty of integrating previous systems.	1) Do not have standardised data management among functional departments (Vanke); 2) Lack collaborations among departments (Vanke & Gemdale).
The lack of consensus in e-business understanding among senior management (Vanke, Gemdale).	1) Lack consensus in the importance and urgency of the e-business adoption; 2) Some senior managers lacked good knowledge of e-business and its relationship with business management.
The lack of customer acceptance of e-business (Vantone-Ehouse).	Customer acceptance depends on socio-economic context.
Technical constraint of the CRM system (Vantone-Ehouse)	The technical constraint of meeting the complexity of the business process.

In conclusion, 'standardisation' is a key construct when taking into account e-business challenges in the industry. As Vanke3 mentioned: *"Standardisation is the foundation for integrating e-business with business operations. Only when unified codes are adopted within the whole corporation can data input and business operations be carried out simultaneously.* (Vanke3, Visit2)"

The difficulty of 'standardisation' may come from different aspects, e.g. the disparity of the levels of property development across regions, the lack of collaboration among functional departments, legacy systems, and the repetition of system adoptions.

7.4.5The impact of e-business applications

The level of e-business application in the industry

The interviewees from the case companies gave their views on the e-business development in the industry. The most recurrent themes they mentioned are as follows:

Some considerable differences have come to light between industries with regard to e-business applications. E-business applications within the Chinese housing development industry can be seen to be outdated or in their early stages. The reasoning behind these is:

1) The Chinese housing development industry is in the stage of growth which features high profits, relatively mild competition, and differentiated products. Since the industry has average high profits, companies do not want to be proactive in e-business applications. However, Gemdale2 believed that the status quo within the industry would change along with government policy changes and increasingly intensive competition. As a result, e-business would then play a more important role. However, these changes were unlikely to happen without difficulties arising, given the complicated power structure within the companies.
2) The business process of house construction has not been seen to have greatly improved over the previous fifteen years.

The interviewees regarded Vanke as the pioneer within e-business applications in the industry.

Strategic e-business application does not exist in the industry. Rather many companies adopted e-business in the form of carrying out an e-business project. Some companies have explored e-business in order to catch the dot-com wave, such as Vanke's e-procurement application and the establishment of Vanke-Ehouse; some companies regarded e-business application as a project to improve their companies' images.

The evaluation of e-business applications

Up until 2002, Vanke, having been a pioneer in e-business adoption were unable to find an appropriate benchmark for their e-business applications. It was impractical for them to compare their e-business applications with those of other Chinese companies. But Vanke soon realised that its e-business applications were lagging far behind Western pioneers such as Siemens.

For its e-procurement application, no formal evaluation had been carried out. This was due mainly to the difficulties in attempting to evaluate the impact from the value creation perspective or from the quantitative perspective. *"The adoption of an e-*

procurement website itself did not directly lead to cost reduction. To achieve cost reduction, more work needed to be done offline rather than online." (Vanke5, Visit4)

In 2003, to evaluate the impact of its knowledge management platform, Gemdale carried out a questionnaire with regard to its employees. No further evaluation has been conducted due to the difficulty of evaluating e-business application from the quantitative perspective. This could be because the success of a housing development project depends on many factors besides IT application.

Vantone-Ehouse contracted out e-business evaluation to consultant companies. Vantone-Ehouse also carried out some evaluations internally.

Vantone-Ehouse maintained close communications with foreign companies and came to regard an American company, Toll Bothers, as its benchmark. Toll Bothers engaged in building personalised luxury homes.

Table 7-5 summarises the status of e-business evaluation within the case companies.

Table 7-5: E-business evaluation within residential development industry

Categories	Instructions
Benchmark	1) Vanke could not find an appropriate benchmark company because its e-business application was a pioneer project in China. The company attempted to learn by experience from the examples set by foreign pioneer companies, e.g. Siemens, in relevant e-business applications. 2) Vantone-Ehouse regarded an American company, Toll Brother, as its role model. 3) Gemdale could not find an appropriate benchmark company within the industry, but gained some relevant insight into applications from foreign real estate companies.
E-business application	1) Vantone hired consulting companies to conduct evaluations; meanwhile internal evaluations were carried out. 2) Vanke and Gemdale have not conducted any overall evaluations with regard to e-business. 3) Gemdale conducted questionnaire to employees in term of its KMP implement.

The competitive advantages of the case companies

The following sources of competitive advantage have been commonly stated by the case companies:

- Brand names which derives from local government support, design capability,

marketing capability, and high quality customer service.

- Operational efficiency which is achieved through managing such interrelated factors as organisational structure, corporate governance, and software applications.

In addition, other sources of competitive advantage have been pointed out by these companies respectively i.e. leaders' vision of the market developments (suggested by Vanke); knowledge management (Gemdale); distinguished made-to-order business model (Vantone-Ehouse).

E-business' impact on the competitive advantages

The case companies have all adopted marketing expansion strategies and attempted to strengthen their brand names. E-business has been adopted by these companies to serve these two aims. For example, Vanke has utilised an e-procurement system to control the purchase cost of the subsidiaries across regions; Gemdale has utilised the KM system to manage collaborations among employees across regions; Vantone-Ehouse has utilised e-CRM and e-house websites to interact with nation-wide customers and business partners. These companies have all put great efforts into the e-CRM application in order to build brand loyalty and fulfil customer-orientation and have adopted e-CRM at different levels. Vanke and Gemdale have utilised e-CRM as a customer database through which they have been able to gain insights into their customers and better serve these same customers. In the end, they have achieved customer retention and extension. Vantone-Ehouse has applied e-CRM to a further level: inviting customers to co-design and co-manage their own projects. As a result, personalisation has been achieved and the company has been able to successfully distinguish itself with large powerful competitors.

The improvement of profitability through cost reduction has been a common approach adopted by these companies. Both Vanke and Gemdale attempted to attain cost reduction through centralised procurement in materials although Gemdale has expanded

the practice in all the procurement activities, e.g. in the selection of house designs. Vantone-Ehouse's focus has been to decrease the high costs of interactive communication with their customers.

Based on the aforementioned analysis and Figures 7-1, 2, 3, the relationships between e-business applications and their relevant contribution to competitive advantage achieved by case companies can be stated in Table 7-6.

Table 7-6: E-business' impact on the competitive advantage of case companies

Sources of competitive advantage	Conceptual factors	Related e-business applications by case companies
Operational efficiency	Communication efficiency, collaborations across regions, employee's efficiency & capability.	E-procurement, Intranet & CRM system (Vanke); KMP& CRM system (Gemdale); E-house website & CRM system (Vantone-Ehouse)
Cost reduction	Cost reduction in procurement and interactive communication	E-procurement (Vanke); Online bidding system (Gemdale); E-house website & CRM system (Vantone-Ehouse)
Strengthened brand names	High quality customer service	CRM system (Vanke, Gemdale, & Vantone-Ehouse)

Figure 7-4, 7-5, and 7-6 respectively illustrate the case companies' competitive advantage and the relationships with their e-business applications within Vanke, Gemdale, and Vantone-Ehouse.

Figure 7-4: Vanke's competitive advantage and e-business' contribution to it

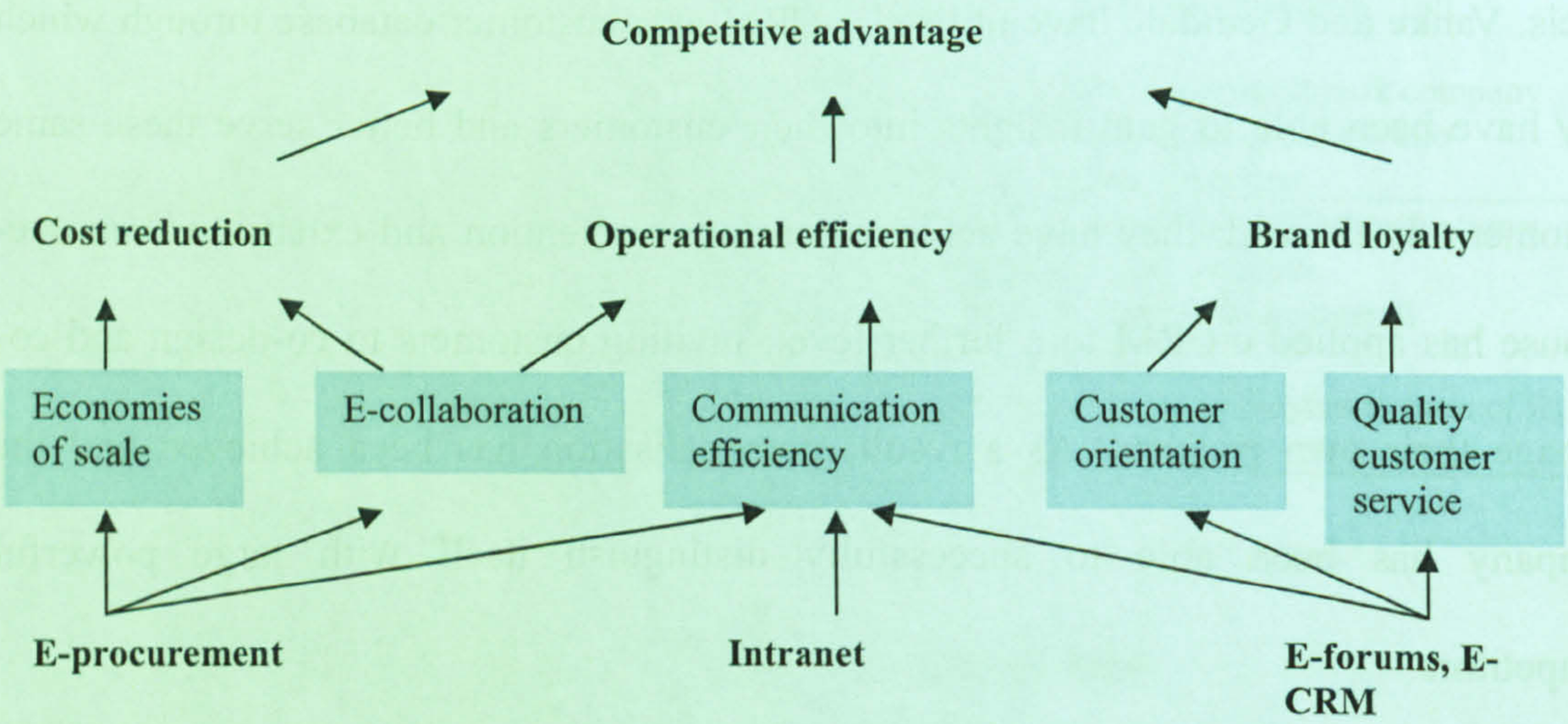


Figure 7-5: Gemdale's competitive advantage and e-business' contribution to it

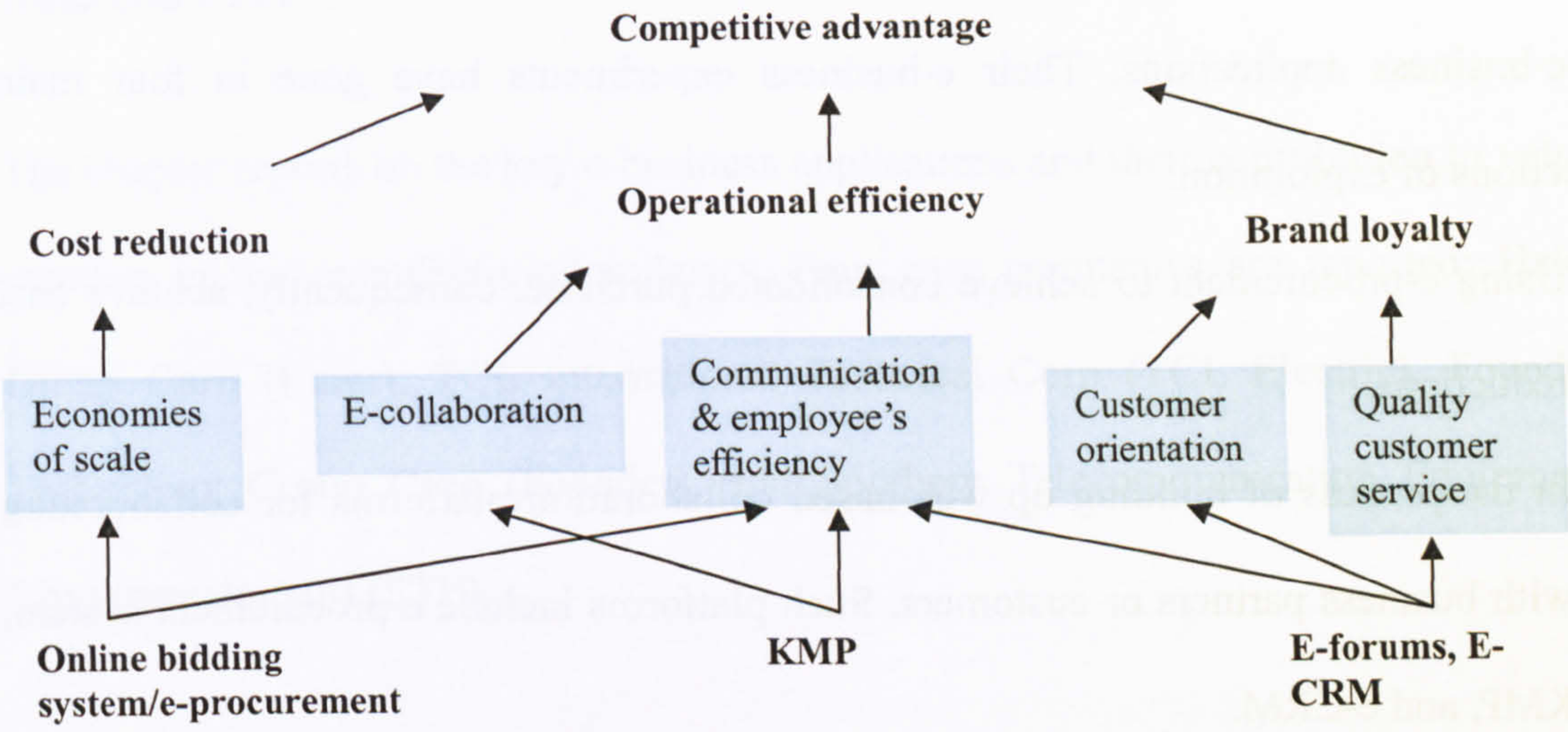
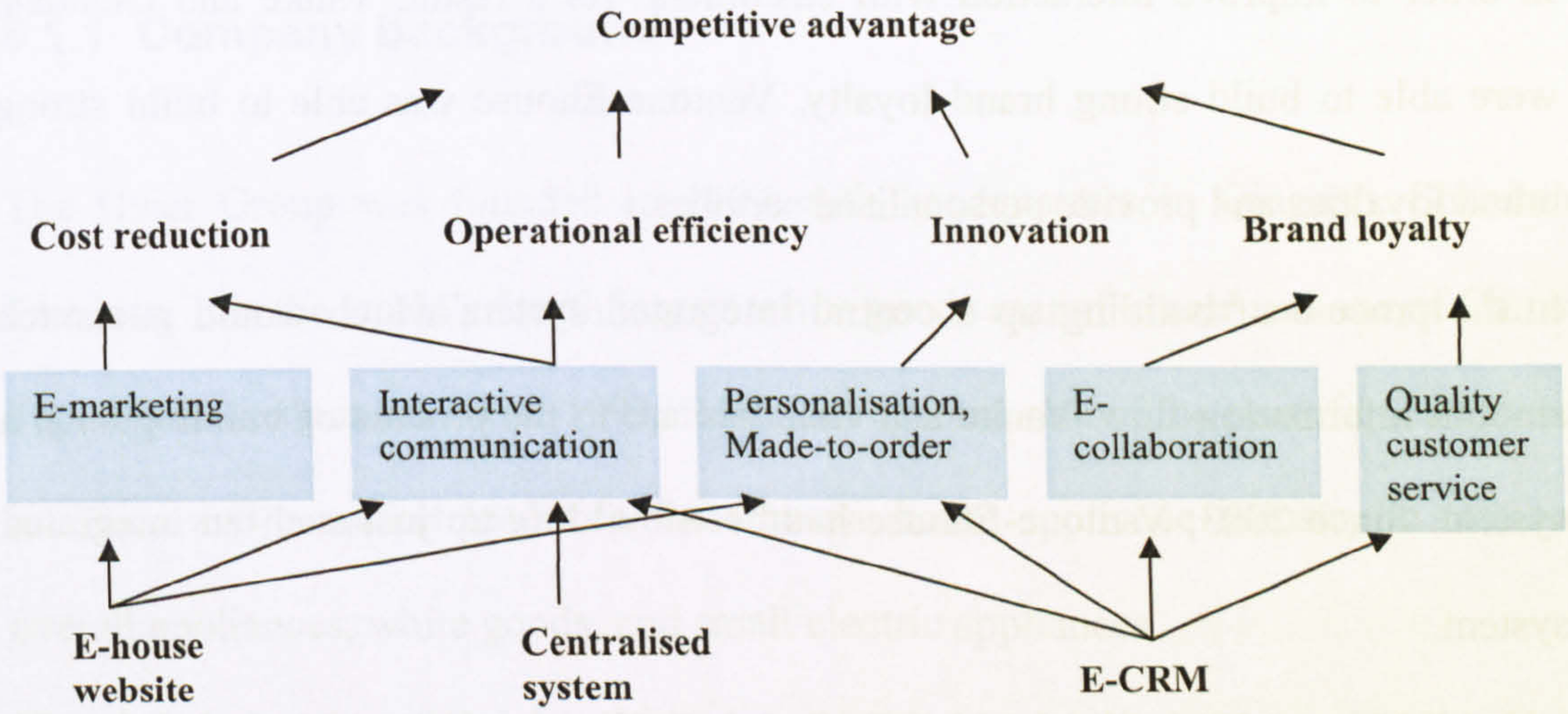


Figure 7-6: Vantone-Ehouse's competitive advantage and e-business' contribution to it



7.4.6 The e-business strategies

By analysing the case companies, the following themes emerged:

'IT plan' is a more appropriate term than 'e-business strategy' for the case companies as Vanke5 commented: "*We had IT plans rather than strategies. These plans were not explicitly integrated with our corporate strategy and organisational structure.* (Vanke5, Visit4)" In 2005, Gemdale was planning to propose an IT strategy which would take into consideration of organisational structure and technological plans, as well as the

corporate value chain.

In the housing development sector, these case companies have become pioneers in terms of e-business applications. Their e-business experiments have gone in four main directions of exploration:

1) Using e-procurement to achieve consolidated purchase, consequently, achieve cost reductions.
2) In the process of building up web-based collaboration platforms for collaborating with business partners or customers. Such platforms include e-procurement system, KMP, and e-CRM.
3) Using e-CRM to achieve customer-orientation concept. This application was utilised in order to improve interaction with customers. As a result, Vanke and Gemdale were able to build strong brand loyalty. Vantone-Ehouse was able to build strong brand loyalties and provide personalised services.
4) In the process of building up a central integrated system which would guarantee smooth information flow. Vanke and Gemdale are in the process of building such a system. Since 2003, Vantone-Ehouse has been building up just such an integrated system.

The e-business plans of these companies need to take into consideration the weak industrial IT infrastructure, which will fundamentally define the scope of e-business applications within the industry.

CHAPTER 8 CASE REPORT: THE MANUFACTURING INDUSTRY

The chapter reports on the key e-business applications and their contribution to value creation in the manufacturing industry. Four case companies are reported: Haier Group Corp (Haier), TCL International Electrical Corp (TCL Electric), Founder Technology Group Corp (Founder), and Southern Telecommunication Equipment Corp (pseudonym) (STE).

8.1 Haier Group Corporation (Haier)

8.1.1 Company background

The Haier Group was founded in 1984 with headquarters in Qingdao, Shandong Province. It is the world's fourth largest white goods manufacturer and one of China's Top 100 IT companies. Since 1993, Haier has become one of the most famous brands in China and a market leader in the Chinese home appliance industry in terms of overall appliances, white goods, and small electric appliances.

The global revenue of Haier in 2006 was RMB¥ 107.5 billion (Haier, 2010b). Haier has over 240 subsidiary companies, over 110 design centres, plants and trading companies and over 50,000 employees throughout the world. Two listed companies of the Haier Group are Haier Electronics Group Co., Ltd. on the Hong Kong Stock Exchange and Qingdao Haier Co., Ltd., on the Shanghai Stock Exchange (Haier, 2010c).

Haier's development strategy has four significant stages: brand building (1984-1991: building a national brand in refrigerators), product diversification (1992-1998: cross-sector restructuring), globalisation (1998-November 2005), and global brand building (since December 2005).

Because of China's entry to the WTO and intensive domestic competition in the industry, Haier has found that it must follow a globalisation strategy. Haier regards customisation and globalisation as two fundamental value sources. Haier's global branding strategy aims at positioning the company as a local brand in different international markets. Its international business framework encompasses a global network of design, procurement, production, distribution and after-sales services.

In China, Haier's four leading product categories i.e. refrigerators, refrigerating cabinets, air conditioners and washing machines have over 30 percent market share. In overseas markets, Haier's products are available in 12 of the top 15 chain stores in Europe and 10 leading chain stores in the USA.(Haier, 2010c)

Public bidding and online purchase are carried out via e-procurement. Strategic partnerships have been established with the best global suppliers, who also participate in the front-end design of Haier products. Collaboration with International players is another method of globalisation adopted by Haier.

Haier's management concepts of the 'market-chain system' and the 'individual strategic business unit' have been widely acknowledged by domestic and overseas management professionals. More detailed explanations of these two management concepts are given as follows:

Market-chain system

Within the company, production and management processes are conducted under the principle of 'market-chain management' and continual information updates. 'Market-chain management' is based on Haier's corporate culture and computerised information system, which concentrates on order information flow and operates with the aim of realising 'three-zero' logistics and capital performance.

'Three-zero' objectives refer to zero stock, zero distance, and zero working capital. Order-based performance indicates that production will not be arranged unless buyers

have placed orders. In this way, products are delivered at the time of payment and thus the goal of zero stock, distance and working capital is realised. Zero stock is attained through 'Just-In-Time' (JIT) purchase, JIT supply chain, and JIT delivery. Zero distance is attained through efficiency in delivery and fulfilling orders, which is, in turn, supported by online-order facilities. Zero working capital means no funding is needed for floating capital. Before making the payment to sub-suppliers, the manufacturer receives payment from the buyers. This can be achieved as production is scheduled on the request of customers. By achieving these 'three-zero' objectives, Haier succeeds in maintaining high efficiency in operation management.

Strategic business unit

Within Haier, every employee is considered to be a Strategic Business Unit (SBU). Haier's one-stop service and Business-to-Employee process exist in order to optimise customised production. By one-stop service, a customer may have all their requirements met at one SBU. A SBU is responsible for the whole order execution process.

Innovation is the core of Haier's corporate culture. Since 1999, Haier has been restructuring its corporate management system. Since then, China has hailed Haier as one of the nation's role models for IT applications.

Haier's e-business adoption was initiated by its CEO Zhang Ruimin, who has recognised the strategic role of e-business by attending the Davos International Economic Conference in 1999. Within Haier, e-business is regarded as:

> *a tool of practice which includes the applications inside the company as well as the collaborations with upstream and downstream companies.* (Haier2, visit2)

Besides the strategic role of e-business, Haier has recognised a key relationship between business process and IT implementation. For example, Haier has established

a group process and IT division so that the staff that are responsible for business process management and IT management can be well informed by each other. Meanwhile, Haier has continuously readjusted its organisational structure to cope with changes in business processes and IT applications. A strategic planning centre was established especially for this purpose.

Within the company, the reasons for adopting B2B and B2C are different. For B2B applications, Haier2 stated:

> *If companies don't want to be out of business in the industry, they have to adopt B2B. E-business applications are causing polarisation of Chinese companies in the industry. By adopting e-business effectively, companies can significantly shorten the production cycle, establish close collaboration with suppliers, and simultaneously develop products with suppliers and customers. For example, customers will express their requirements through e-business method. These requirements can be viewed by manufacturers and suppliers simultaneously. In such ways, it is possible for Haier to meet customers' needs or personalised requirements.* (Haier2, visit2)

For B2C adoption, Haier1 stated:

> *The reason for the adoption of B2C is to improve the corporate brand name and to provide better customer services rather than to make profits. In addition, Haier regards online sale as a trend of future development and their aim is to cultivate this market in order to seize the opportunity. Meanwhile, Haier believes that B2C applications will contribute to the growth of offline sales, improve communication between Haier and its customers, and promote the updating and exhibition of its products.* (Haier1, visit2)

8.1.2 Main e-business applications

Overview of e-business applications at Haier

Haier has used e-business for procurement, sales, marketing, and customer service.

In the first half of 2000, Haier launched e-business projects in both B2B and B2C categories. An e-business company was established especially for that purpose. Haier1 introduced the process of e-business adoptions within the company:

> *With the support from the CEO Zhang Ruimin, Haier's e-business project progressed at high speed. Two months after the project was initiated (in February 2000), the B2C website was launched. Another two months after the test, the B2C website was operating on a national scale with no big problems.*
>
> *The B2C project was developed and managed in-house. In the beginning, we wanted to hire a consultancy in order to make an e-business strategy. But the consultancy asked a fee of RMB¥ 6 million, which was too high for us. So the corporation decided to invest RMB¥ 6 million instead in developing an e-business project in-house.*
>
> *The e-procurement system was adopted in June 2000, and the first product line to be tested was that of air conditioners. By October 2000, all raw materials were being purchased via Internet.* (Haier1, visit1)

The B2B application: e-procurement

> *Haier purchases 95 percent of its raw materials online. It also creates new value by selling the raw materials purchased online to other manufacturers* (Haier2, visit2).

Through its e-procurement application, Haier has achieved two main benefits:

Firstly, accompanying this project, Haier optimised its supplier network and achieved close collaboration with suppliers.

> *As a direct result of supplier-network optimization, the number of Haier's*

suppliers decreased significantly, from previously—about 2000—to its current ratio of about 700. The aim was to search for big international suppliers. Currently, there are around 40 to 50 of Haier's suppliers on the list of Global Top 500 companies. In addition, this process has led to improved relationships between Haier and its suppliers. For instance, some big suppliers have built factories in Qingdao especially for Haier's procurement. Consequently, the cost has been reduced for both suppliers and Haier. (Haier1, visit1)

Through informationalization, e-business adoption, and business process optimisation, the lead time has been significantly shortened. Meanwhile, Haier can closely co-operate with its suppliers. For instance, certain suppliers with authorised rights can view Haier's orders directly. Then, they can co-develop products with Haier. (Haier2, visit2)

Optimising suppliers' network concentrated at a specific period of time. The office of network optimisation was established to operate activities such as assessing suppliers, managing existing suppliers and selecting new suppliers. (Haier1, visit2)

Secondly, significant cost reduction was achieved by both Haier and its suppliers.

Significant cost reduction was achieved by both Haier and its suppliers. For example, suppliers are able to reduce costs of by eliminating marketing activities, while Haier could lower cost by adopting the made-to-order model. Order information could be obtained via the Internet. Then procurement is made according to orders. For each of Haier's purchasing orders, there are at least three suppliers attending the bidding. (Haier1, visit1)

For B2B payment, Haier has cooperated with China Commercial Bank to develop an e-payment system. In 2000, only China Commercial Bank could provide this service. But this Bank has the disadvantage of a limited national network.

Between 2004 and June 2005, there were no significant changes in the methods

of online payment for e-procurement. About 20 percent of online payment was conducted through e-banking. (Haier1, visit2)

The B2B application: CRM

Haier's customer relationship management (CRM) system is mainly used to manage big dealers such as department stores and big stores which sell Haier's products exclusively, and important customers who purchase large quantity of products such as government procurement.

Some dealers connect their systems with Haier's systems. So Haier can then view these dealers' inventories and know their procurement needs. (Haier1, visit1)

Some dealers directly make their online orders with Haier. The benefits of these applications are that Haier can get sales data from dealers more quickly and more accurately. As a result, Haier is able to replenish products in less time. (Haier1, visit2)

While some big dealers have outdated information systems, it is not always possible to use the CRM system to manage these dealers. To them, traditional offline operations are preferable. (Haier1, visit2)

In order to facilitate CRM and guarantee the accuracy of the information, a bar code system was introduced.

The B2B application: ERP

In Haier, the ERP system is used for procurement, inventory management, and production management, including activities of making production plans, generating sales orders, generating production orders, and transferring roles of the staff. (Haier2, visit2)

The ERP system adopted by Haier is not a 'whole set' system developed by a single

company. Different systems have been adopted according to the urgency of corresponding business functions and processes. Besides the ERP system, Haier has adopted a bar code system in order to collect accurate data and improve quality control. Haier is considering RFID implementation, but there is concern over the high investment involved.

> *The impact of the ERP adoption is that the IT department can get data on manufactured products and analyse the data accordingly.* (Haier2, visit2)

The B2C application

Haier's B2C website sells its own products to the consumers. The following benefits had been achieved by the adoption of B2C in 2004:

- Customer base extended to include customers in remote rural areas which are out of the coverage of Haier's sales network.
- Customer needs met and Haier's brand name improved. The B2C website offered more options to existing customers. For instance, the option of providing personalised products was offered to give customers an opportunity to express their personal preferences. Additionally, it provided opportunities for customers to buy Haier's products as gifts for their friends or families who are in different cities.
- Offline sales promoted. Supplied with detailed products' information online, customers are more likely to buy Haier's products when they are shopping offline.

Moreover, by gaining B2C experience, Haier hopes to gain first-mover advantages when customers are ready for the online purchase.

After years of development, e-business applications are quite stable within the company. There appeared to be no radical changes in B2C applications between 2004 and 2005. The main efforts were concentrated on working out solutions to the problems arising in the year 2004. For example, in the B2C operation the problems were:

1. The conflicts between online and offline channels

In 2004, one of the main obstructions of the B2C application was the conflict between online and offline channels in the secondary and tertiary markets. This arose because offline channel dealers were being used as the B2C delivery channel. (Here, secondary and tertiary markets refer to the markets in the countryside, towns or small cities.) Meanwhile, online prices were lower than the retailing prices in the secondary and tertiary markets. So, dealers had no incentives to support Haier's B2C application.

Online sales in the primary markets (here, the primary markets refer to the markets in middle or large cities) accounted for a lower proportion around 40 percent compared with sales in the secondary and tertiary markets. This was contrary to the online population in these two categories of markets. Haier1 explained the possible reasons behind this:

> *The convenience of shopping offline in the primary market may explain this difference. Moreover the company gave no incentives to customers in the primary market which could encourage them to purchase online.* (Haier1, visit2)

Haier's solution to this was to charge delivery fees to customers in the secondary and tertiary markets and give subsidies to retailers for extra delivery fees if the delivery distance was longer than usual. Customers accepted this change because online prices, which included delivery charges, were still less compared with the offline prices. Thus, B2C sales turnover improved

The growth rate of B2C sales turnover, at 50 percent in 2004, improved. Setting up fixed growth target, adopting new marketing methods, and the improved e-business environment contributed to this overall improvement in growth rate.

2. Adjustments on on-line offering

In 2005, Haier cancelled the online option of accepting individual consumer's

personalised requirements because of the high production cost and the low volume of customer requirements. Meanwhile, the B2C website gave up the objective of becoming an e-shopping mall because it had no competitive advantages over other companies in terms of selling other categories of products. Meanwhile, as a subsidiary company of Haier, the B2C website did not become an e-retailer of electrical appliance products since it only sold Haier's products.

For the B2C payment, 90 percent of the payment was paid cash-on-delivery. The proportion of online payments in 2005 was increased by 1-2 percent compared with 2004. The e-banking system was the main online payment method. In the preceding years, Chinese banks had been making efforts to provide online payment services.

Overall, the growth rate of B2C is not fast enough. Haier1 gave the main reasons as:

> *The customers are not ready for B2C in home appliance market. Also, delivery is a bottleneck. Haier's sales network hasn't covered some remote rural areas.* (Haier1, visit1)

> *Therefore, not many manufacturers in the industry have adopted B2C because of two reasons. Firstly, customers are not ready to accept B2C in this market. Secondly, high investment is needed for B2C applications.* (Haier1, visit2)

Automate and streamline internal administration management

A knowledge management (KM) system has been adopted in Haier but is not regarded as important. The human resource management (HRM) system, with some basic functions such as document and file management, has also been adopted by each subsidiary. These HRM systems are connected online.

8.1.3 The challenges of e-business applications

The following obstructions arose when Haier was implementing e-business:

- The information transparency led to the diminishing of power held by some senior managers. Consequently, they resisted e-business applications.
- In the process of optimising supplier networks, the company encountered the problem of dealing with the relationships between some small suppliers who had collaborated with Haier for a long time failed to meet the new requirements of e-business adoptions. The handling of these relationships also affected the power held by some leaders because of their own relationships with some small suppliers.
- There were conflicts between the online and offline channels because retailers had no incentives to deliver products for Haier's online orders.
- The growth rate of online sales was not significant. The reasons were as follows: a) the extent of consumer acceptance of purchasing electrical appliances online was at low level; b) the B2C operation had no competitive advantages over offline sale because no incentives were provided for online purchase; c) B2C was also limited by delivery network. Haier uses its existing sales network for online delivery. However, the network did not cover remote rural areas.

8.1.4 E-business applications' impacts

At this point Haier had no formal evaluation system for its e-business applications. Nonetheless, some evaluation indicators, such as the production cycle, capital circulation cycle, and product quality, were adopted to evaluate the changes brought about.

With the B2C application in Haier, no evaluation was carried out because the main aim was to promote Haier's brand name and offline sales.

E-business' impacts on competitive advantages

Brand is Haier's main source of competitive advantage. Our brand name

> *consists of high quality products and/or services as well as high quality customer care. E-business application is a composition of the brand name. For instance, the B2C application has contributed to maintaining the company's brand name.* (Haier1, visit1)

Through business process redefinition, organisational restructuring, and e-business adoption, Haier's operational efficiency improved greatly. This was reflected in shortened lead time, improved collaborations with suppliers and customers, smooth information flow, and zero operational capital. For example, customers now express their requirements online. These requirements can then be viewed by Haier and its suppliers simultaneously. In this way, it has been possible for Haier to develop personalised products and to shorten lead time.

> *Compared with previous information systems, e-business applications have the advantage of shortening lead time much more significantly. For instance, before e-business adoption, Haier's lead time was usually 36 days. After adoption, Haier has basically realised order-oriented production i.e. producing to order, making production plans to order, and delivering products to order. As a result, the lead time has been shortened to 7 to 10 days, which brings significant competitive advantage. Moreover, orders can be completed more accurately because the information flow is connected from the front to the back office.* (Haier2, visit2)

Another significant impact of e-business applications in Haier is the realisation of zero operational capital. This is due to the following factors: a) dealers have to pay bills before they can get products from Haier; b) as a renowned large company, Haier can pay its suppliers some time later after they get the materials; moreover, c) Haier can complete the orders very efficiently because of informationalisation and e-business application.

Additionally, e-business applications help the company to realise information

synchronisation which improves its response to markets.

E-business' impacts on organisational structure, culture, and the industry

The core value of Haier's culture is innovation. E-business application has little impact on Haier's innovation culture because this concept was advocated long before the e-business adoption. But the innovation culture has contributed to the implementation of e-business.

E-business application has had significant impact on organisational structure. Business process is redefined based on information flow, logistic flow, and capital flow. Meanwhile, organisational structure was reorganized. The new organisational structure was built from the whole enterprise perspective of putting the same functional departments from previous companies into the same company. Hence, structural repetitions in different business divisions were removed and professionalism has been improved. Based on the new organisational structure, Haier can apply the 'internal marketing chain concept' to stimulate the motivation of its employees. With this, the relationships between all the functional companies become marketing relationships.

After the restructuring programmes, Haier's organisational structure became flattened. And the operational model transformed from leadership- or functional-orientation to marketing-orientation or demand-driven model. Hence, Haier was better able to manage its end users and suppliers. Under the 'internal marketing chain concept', one employee is responsible for a task from the start to the completion of the business process (the so called 'individual strategic business unit', which is introduced in **Section 8.2.1**). As a result, better supply chain management and customer relationship management has been achieved.

Companies in the industry have different attitudes towards the B2B and the B2C applications adopted by Haier. In terms of the B2C application, although Haier has

applied it for five years, no competitors in the industry have followed the practice because they believed that B2C application would be unable to make any profits.

However, with regard to the B2B application, if companies do not want to be out of business within the industry, they have to adopt it. By adopting e-business effectively, companies are able to achieve significant benefits.

8.1.5 Haier's e-business strategy

The formulation process

The process of making an IT plan in Haier is as follows:

1) The group process department first optimises business processes. Then,
2) The IT department decides which information systems to adopt in order to support the optimised business processes. Following it,
3) The IT department becomes responsible for the implementation of the IT plan.

This process is reflected within Haier's organisational structure. A division named 'group process and IT division' was established at the headquarters. In this division, the group process department became responsible for optimising and promoting business process and the IT department for making an IT plan based on optimised business processes.

In summary, within Haier, organisational culture, organisational structure, and e-business applications are continuously readjusted according to each other's development. By readjustment, each factor becomes the contributor of the others' successful implementation.

E-business strategy

From the business process and IT department perspective, Haier's dream is to produce products for every individual consumer. To achieve this aim, e-business adoption is a necessity. The final aim of Haier's e-business applications is to

meet every customer's requirements which does not necessarily mean producing personalised products. Rather it means producing products based on the criteria that are higher than customers' expectation. That is not only meeting customers' requirements but also creating needs for customers. (Haier2, visit2)

To use e-business with the intention of creating impressive effects, smooth information flow along the whole enterprise is the key. E-business applications have been used to manage supply chain and internal administration. Meanwhile, the e-business platform was regarded as an interactive platform linking Haier and its business partners. This required the use of advanced information systems such as an ERP system and a CRM system. Haier's information systems have to be updated constantly to meet the rapid corporate growth of recent years.

From the e-business department perspective, which is concerned with the B2C application, Haier's e-business plans in 2004 were:

- To adopt B2B and B2C simultaneously and on an entire corporation scale.
- To use e-business to create new value for Haier.
- A future view to the B2C website becoming an e-shopping mall. This aim was deleted in 2005.

In 2005, the main aim of the e-business department was to improve the B2C sales and to achieve definite annual growth rate. The solutions to realise the aim were:

- To strengthen advertisements through both online and offline channels;
- To organise online activities for customers, for example, a loyalty scheme. This promotional activity was so successful that the company applied it offline. Haier then considered combining the loyalty scheme of both the online and offline channels;
- To establish a customer centre and provide online customer services from 8AM to 8PM in order to improve customer loyalty and increase repeated purchasing;
- To improve the quality of customer order management through applying a reward and punishment system with regard to employees;

- To optimise the online business process.

8.2 TCL International Electrical Co., Ltd. (TCL Electrical)

8.2.1 Company background

Founded in 1993, TCL Electrical was a subsidiary of TCL Corporation, a leading Chinese manufacturer of consumer electronics. Established in 1981, TCL Corporation is one of China's largest consumer electronics corporations operating on an international scale. Three listed companies operate under the TCL flag: TCL Corporation on the Shenzhen Stock Exchange, TCL Multimedia Technology and TCL Communications Technology on the Hong Kong Stock Exchange. TCL is presently composed of four main industrial groups: multimedia, communications, appliances and components.(TCLCorp., 2010a)

TCL Electrical specialised in the research and development as well as production and marketing of premium power switches, sockets, low-voltage electrical appliances, cabling systems, and security products. With the support of its parent company and ten year's experience in its own sector, TCL Electrical had established itself as a leading Chinese manufacturer of wiring devices. Its own brand 'TCL International Electrical' was well-received in the Chinese domestic market and the company focused on one of the five core industries that TCL Corporation involves in.

TCL Electrical has over 3,000 employees, 35 branch offices, and a few thousands chain stores in China. The company had also set up offices in several overseas markets, including some south-east Asian countries and Egypt (TCLElectrical, 2006). The company's headquarters was in Huizhou, Pearl River Delta. In 2003, its sales turnover reached RMB¥ 550 million and the net profit was RMB¥ 192 million (TCLCorp., 2004). In December 2005, TCL Corporation signed an assets transfer agreement with France's Legrand Corporation to sell two of TCL's corporate divisions: the TCL International Electrical (TCL Electrical) and TCL Building Technology (TCLCorp., 2010b).

TCL Electrical was a pioneer in applying IT and exploiting new management concepts

in its sector. TCL1 explained the understanding of e-business within the industry:

> *In China, e-business refers to B2C or B2B but not necessarily web-base transactions e.g. managing business relationships with customers and suppliers.* (TCL1, visit1)
>
> *B2B, which refers to using information systems to maintain relationships with dealers and suppliers, had been applied by many large Chinese companies long before the e-business concept was invented. B2B application focuses on providing support in order to achieve smooth supply chain management. The Internet is the most effective way to achieve this aim. Future direction of e-business could possibly be to form a system from the whole supply chain perspective. It is easy to apply B2C from technological perspective. The key factor is whether customers need a B2C solution.* (TCL1, visit2)

TCL1 gave reasons for e-business adoption within the company:

> *In TCL Electrical, e-business adoption was chiefly motivated by the necessity of business operations. It is the management challenges encountered during the process of business operation that motivate us to innovate. For example, we encountered the problem of inaccurate marketing forecasts. Consequently, we needed to think about how to improve channel management. The adoption of dealer inventory management system is an experiment. Our aim is to get information on dealers' inventory. As a result, we can improve the accuracy of forecasting, then, quickly respond to market demands. For example, when we want to promote our products, we will know exactly which products need promotion. Also, if we want to define product prices, we will make better decisions based on the information collected from this system.* (TCL1, visit1)

Other motivations of e-business adoption include:

a) support of the company's expansion strategy. TCL Electrical needed to have good control on both the front-office and back-office operations;

b) TCL Electrical was looking to gain advanced experience from other pioneers in global supply chain management. Wal-mart is a good example of such.

8.2.2 Main e-business applications

Overview of e-business applications at TCL Electrical

TCL Electrical started constructing Internet-based networks in 1999. First, enterprise data exchange was adopted. Then the Internet-based network was constructed gradually by using a platform designed by Microsoft. TCL Electrical was the first company in the sector to adopt such a platform. In TCL Electrical, e-business application has progressed rapidly in the following areas:

The B2B application: channel management

Since 2001, TCL Electrical has connected its websites with its dealers' websites. Usually these dealers are big companies and have adopted the Internet. Through this application, dealers can place orders, pay bills, and transfer business information online. TCL Electrical called this system 'the sales system'. The business executives of TCL Electrical audit these orders, which are then be transferred to its business systems.

> *In 2005, the sales system, which stored information on dealers and product prices, was moved into enterprise information portal (EIP) so that dealers could access more information. For instance, dealers are able to find information on TCL Electrical's price and market policies, their own orders, and TCL Electrical's inventory relating to their orders. This information helps to improve dealers' business operation.* (TCL1, visit2)

In 2004, TCL Electrical planned to extend its sales system by adopting dealer inventory management system, which would then provide TCL Electrical with information on dealers' inventory. TCL Electrical planned to build a database and provide IT services for its dealers with regard to this application. As a result, TCL Electrical expected to

improve the accuracy of its marketing forecasts and the response to markets. For example, TCL Electrical can make or change their price and market policies based on the timely accurate sales and inventory information provided by the dealers.

However, in practice, dealers only used the previous sales system to place orders. They did not want to use the dealer inventory management system to manage their own inventory. Since they also provided services to other manufacturers, they worried about the confidentiality of their information. Hence, the plan of implementing a dealer inventory management system failed. TCL1 commented:

> *Our original aim of managing dealers' inventory was not practical because dealers do not distribute our products only. Only if we change our sales model to employ dealers who only sell our products can the implementation of dealer inventory management system be possible.* (TCL1, visit2)

Hence, the success of implementing dealer inventory management system is decided by two factors: the trust relationship between TCL Electrical and dealers and the concern about the information confidentiality. These two factors are influenced by the distribution model and the bargaining power relationship.

The B2B application: e-procurement

E-procurement had been adopted by the end of 2004. This application contributed to significant cost-saving in the first half year of its adoption. However, online auctions could have had side-effects. For example, putting too much pressure on suppliers could damage collaborations between TCL Electrical and its suppliers. TCL1 described e-procurement's contribution to cost savings and the need of collaboration during the implementation:

> *E-procurement contributed to significant cost-saving in the first half year of its adoption. The corporation invested 100, 000 RMB in this online-auction system, which is integrated with its website. In the first half year of its adoption, TCL*

Electrical saved around between 1,000,000 to 2,000,000 RMB.

Before operating an online auction, TCL Electrical will provide potential suppliers with detailed information on procurement. When bidding for contracts, suppliers usually offer much lower price because of peer pressure. In some special cases, because of the extremely low price offered, some suppliers even withdrew their offers afterwards despite heavy penalties. Hence, the adoption of e-procurement seems to put all the pressure on the suppliers' side. Nevertheless, collaboration would be a better way. (TCL1, visit2)

The process of the e-procurement operates as following:

1) Before operating an online auction, TCL Electrical provides suppliers with information on the scope of required materials. Then,
2) TCL Electrical would check the type of products provided by suppliers. Finally,
3) TCL Electrical adopted an elimination system by which, the weakest performer would be eliminated every year.

In the process of applying the e-procurement, TCL Electrical optimised its supplier network. For example, the number of suppliers decreased.

To effectively manage the e-procurement process and to prevent corruption, TCL Electrical assigned the activities of orders placement and management of the e-procurement operation to two different departments. Meanwhile, a third department was appointed to supervise the overall e-procurement process. In addition, a supplier evaluation system was applied to further prevent corruption in the process of selecting suppliers. The results of the evaluation were then recorded in the company's ERP system.

The B2C application

In TCL Electrical, the B2C website is used to promote the company image rather than facilitate B2C transactions. Therefore, the design of the website was not based on the

practical needs within the purchase process. For example, some of the company's products cannot be found on their website.

TCL1 explained the reason of the inactive B2C application in TCL Electrical:

> *Currently, our end consumers have no need to buy products online.* (TCL1, visit1)

In 2005, the B2C application was improved in the following areas:

1) An online customer order form has been provided. Customer orders can then be forwarded to district administrative offices first and then to the dealers.
2) Online customer service and an online customer forum were provided although they were not widely used by customers.

In summary, slow progress was made between 2004 and 2005 because customers were still not ready for B2C.

Internal administration: channel management & enterprise information portal (EIP)

In TCL Electrical, channel management websites have been divided into two categories: to manage dealers and to manage TCL Electrical's subsidiary companies or sales branches. TCL Electrical regarded the latter category as internet-based IT business support. The difference between these two categories lies within the authority level. All the communications, including information flow and capital flow, between the headquarters and the subsidiaries, are conducted via the Internet. For example, subsidiary branches have their own websites where employees can obtain all the data they need for business operations.

In the second half of 2004, TCL Electrical adopted EIP to manage its information. TCL1 gave his understanding on EIP:

> *From the IT perspective, EIP is an information warehouse for end users. Different levels of access authorities are assigned to different end users. All the*

information obtained from previous disconnected functional system such as ERP system, financial system, and HRM system is available at EIP. Hence, all the employees and dealers can get relevant information with a single registration. (TCL1, visit2)

EIP adoption had significant influence on TCL Electrical because it facilitated the network integration and a strict control over access rights. As a result, employees are able to access information more efficiently and more conveniently than before. Subsidiaries save costs and resources on installing new information systems because this job can now be done by the IT division at the headquarters. And the connections among previously disconnected systems have been improved. The subsidiaries benefit most as currently they can complete an order in a few minutes or one or two days but before the process needed around ten days. This, however, brings concerns regarding online security management. (TCL1, visit2)

To summarise, the EIP application has equipped TCL Electrical with the capability to:

- improve the convenience of accessing to information and improve the relevance of information obtained;
- improve interactions among previously disconnected information systems;
- improve business operational efficiency through the shortening of order handling time, especially in the subsidiaries;
- improve IT operational efficiency. Some common resources and processes such as online security and system tests can be shared between the headquarters and subsidiaries.

The overall impact has been on information integration and real time information sharing, which, in turn, lead to operational efficiency and working mobility on a global scale.

However, the convenience of accessing information also brings out a big challenge of

managing online security.

Automate and streamline internal administration management

In TCL Electrical, human resources management is basically operated via the internet. For instance, employees in the subsidiaries can check their salaries and attendance rate online. And all the information needed by the front-office can be obtained from the Internet. The communication between the subsidiaries and the headquarters is mainly via emails. However, TCL1 thought that:

> *Strictly speaking, TCL Electrical has not realised office automation.* (TCL1, visit1)

8.2.3 The challenges of e-business applications

In TCL Electrical, the objections to e-business adoption were:

- The collaboration from dealers was lacking. When TCL Electrical implemented the 'dealer inventory management system', dealers were unable to make profits from the application in the short term. Hence, the adoption was regarded as a burden in terms of both the workload and the cost. In addition, dealers were concerned with the risk of exposing confidential information and the diminishment of bargaining power.
- The adoption of a dealer inventory management system needed TCL Electrical to redefine some issues, which was not easy to realise.
- There was some resistance from employees who did not wish to change their working habits and who lacked the necessary understanding of the e-business concept.

The fundamental obstruction came from the corporate governance system when TCL Electrical wanted to apply e-business at strategic level. TCL1 commented on this point:

> *Companies should advocate management based on rational management*

systems rather than personal preferences. The establishment of a rational or scientific management system is the foundation of applying e-business at the higher level or at strategic level such as supporting strategic positioning. (TCL1, visit1)

8.2.4 E-business applications' impacts

TCL Electrical has not conducted any formal evaluation on its management information systems. TCL1 gave the reasons for this:

In a Chinese enterprise, an evaluation on the management information system will be carried out in only two situations: (a) the senior managers are not satisfied with an application; (b) an application has created great value so that the enterprise needs to spread this application. In TCL Electrical, employees and the senior management are quite satisfied with the e-business applications. There is no need for a formal overall evaluation. Nonetheless, there were some changes that could be evaluated from quantitative perspective. A typical example was the application of an internet-based examination and approval process which includes the process of dealing with orders from customers and suppliers. Before the application, the duration from generating an order to despatching the products needed about ten to fifteen days. Now this process can be done in just a few minutes or one or two days. (TCL1, visit2)

For each individual IT project, TCL Electrical evaluates the impact at the end of each year. These evaluation indicators are consistent with the impact of the project and the extent of achieving the proposed aims. These are proposed at the beginning of the project. Several departments attend the evaluation process. User feedback is the most valuable indicator. The information management department offers its own opinions on the entire IT structure and the future IT plan and achieved benefits are stated. For

instance, over RMB¥ 1million was saved over the first six months of the e-procurement system operation.

In summary, to each individual IT project, TCL Electrical has an evaluation system which is based on user's feedback, the extent of achieving proposed aims, and the management's comments. However, for IT construction over the whole enterprise, TCL Electrical has not made any evaluations to date because the process involves many technical systems and the evaluation process is time- and resource-consuming. Nonetheless, the IT department submits a summary report every season.

E-business applications' impacts on competitive advantages

TCL Electrical's main sources of competitive advantage derive from its brand name and sales channel management. Its brand consists of high quality products and wide customer recognition. The company's products are the best in the Chinese electrical accessories sector.

TCL1 commented on e-business' impacts on the company's competitive advantage in terms of supply chain management and internal management:

> *E-business certainly has effects on improving the quality of the products and services. For example, the advanced information management in sales channel provide our suppliers and dealers with advanced information process management and improved operational efficiency. Consequently, dealers are very proud of themselves for using advanced technology and cooperating with a big company. In the end, the high efficiency brought by e-business application promotes our brand names.* (TCL1, visit2)

> *E-business applications have significantly improved working efficiency. Before the adoption, it took a few days to complete an order as it involved several rounds of approvals. Now, it only takes a few minutes. E-business applications have changed employees' concepts of information system and improved their*

efficiency. By using IT to redefine business processes, employees have accepted the idea of using the Internet to improve their working efficiency. (TCL1, visit1)

E-business applications' impacts on organisational structure and the industry

Since business processes in each subsidiary are standard, TCL Electrical wants to have standard websites, but has not achieved this as yet. TCL1 described TCL Electrical's organisational structure as such:

The headquarters functions as an administrative unit. To manage subsidiaries properly, the headquarters needs to get support from the subsidiaries. To achieve this, firstly, the headquarters needs to gain trust from subsidiaries rather than impose restrictions on them. (TCL1, visit2)

IT was only regarded as a supporting tool to the management system. Hence, organisational structure has not been restructured fundamentally after the e-business adoption. Nonetheless, organisational structure has been and will be subtly adjusted on a continual basis. TCL1 gave examples:

For instance, the IT department becomes an independent department. A business management department is established which is responsible for business support activities e.g. dealing with orders, communicating with customers, checking customers' credit. The operation of business management department is based on Internet-based networks. Hence, the staffs work efficiently. Moreover, the operational efficiency of the whole company has been improved because of this professionalism. (TCL1, visit2)

Overall, the main changes have taken the form of workforce reduction rather than organisational structure redesigning. As a result, the company is loath to mention the impact this has.

In summary, the interviewee believes that e-business applications have contributed to

the company's competitive advantage because the applications have enhanced the company's brand name and high quality image.

The interviewee's view on the impact of the company's e-business applications on the industry structure is as follows:

> *Our e-business applications will help to improve IT applications in the whole sector as competitors may feel pressure from our e-business adoption. Some competitors were imitating our products. However, they couldn't imitate our IT management because they lacked human resources and senior managers' support. Moreover, IT adoption requires a perspective of forward-thinking rather than seeking short-run profits, but most companies seek short-term profits.* (TCL1, visit1)

8.2.5 TCL Electrical's e-business strategy

Overall, in TCL Electrical, IT plans were concerned with supporting business operations. This can be seen to be reflected in the definition of its IT department. TCL Electrical defines its IT department as an 'information management department' which consists of functions such as improving operation efficiency, fixing business processes, and helping employees solving problems. The focus is firstly on business processes and then IT technologies. This role definition is well accepted by users in the company because IT staff can provide some useful suggestions to their business operations. Based on this role definition, IT staff usually spend one third of their working time on communication with staff in different departments to gain understanding of business processes. As a result, these business processes are reflected and fixed in the IT design.

In 2004, the main aim of the IT adoption was to achieve working mobility on a global scale. Also, it was the company's wish to apply IT over the whole corporation scale. Consequently, EIP was adopted in 2005.

As the company had expanded into different industries through acquisition, in 2005 the main aim of IT applications became the integration of TCL Electrical's business operation with their acquired companies. This integration required standardisation and the integration of information systems. TCL Electrical planned to build these two foundations first. On this basis, they were able to add new information systems. Ultimately, TCL Electrical's hopes were to build information systems that are user-friendly, intelligent, and reflect individualisation.

By 2005, TCL Electrical's IT plan had not been explicitly integrated with its company strategy. The consistency between the IT plan and the corporate strategy was only realised through the personal communication between the interviewee and the CEO.

TCL1 commented on the IT plan:

> *In our sector, a long-term IT plan is not pragmatic giving the fast changing feature of the IT technologies and the competitive environment.* (TCL1, visit2)

8.3 Founder Technology Group Corp. (Founder)

8.3.1 Company background

Founder is a leading Chinese personal computer (PC) manufacturer, which is listed on the Shanghai Stock Exchange. Founder's core businesses are the design and manufacture of PCs and computer peripherals. In 2004, its sales turnover for PCs and PC-related products reached RMB¥5,918 million, and profits reached RMB¥42.5 million. Founder claims to be the second largest maker of PCs in China with a market share of 11.9% in 2004 (Founder, 2005). In 2007, its revenue exceeds one billion US dollars, with over 4500 employees. Its annual output of PCs in 2007 reached 3.5million units and ranked the fourth in the Asia-Pacific Area (Founder, 2010a). Founder's main domestic competitor is Lenovo China.

In response to the narrower profit margins and the increasing intensive price competition in the market, Founder continuously pursues a low-cost strategy through economies of scale and operational efficiency. In detail, Founder directed its efforts into increasing market shares, improving supply chain management, and exploring new, higher profit margin IT market sectors. For instance, Founder is attempting to transform itself from an equipment manufacturer to a professional service provider by investing in R&D (EI, 2009, BMI, 2010b).

Besides gaining advantages from economies of scale and operational efficiency, Founder has another advantage: high quality human resources. The corporation is a subsidiary of Peking University Founder Group. Its close relationships with the top Chinese university and the Chinese government keep the company well supplied with a steady stream of engineering talent (EI, 2004a).

Through learning global advanced manufacturing concepts e.g. Just-In-Time, Pull Production, Kanban Management, Founder formed the Founder Lean Production System (FLPS) in 2007. The FLPS has been applied to its PC manufacture (Founder,

2010b).

Its PC factories have applied many advanced production technologies e.g. quality management system, ERP management system, e-business systems, and modernized inventory and logistics systems. (Founder, 2010b)

The interviewee stated the status of the e-business applications in the PC manufacturing sector as follows:

> *In the Chinese PC manufacturing industry, e-business applications are more advanced and have longer history compared with other industries.* (Founder1, visit1)

In Founder, the understanding of e-business is evolving as time goes on. In 1999, when Founder first adopted B2B, e-business was understood as "*using IT to conduct transactions with business partners* (Founder1, visit1)". Later, Founder regarded the e-business system as a web-based collaboration platform for the company and its business partners. Founder has designed systems which are used as collaboration platforms shared within the company and with its service providers, suppliers, or dealers. The collaborations include business transactions and communication. Currently, Founder defines e-business concept as "*electronically managing the whole supply chain or value chain* (Founder1, visit1)". This refers to systems that are used for collaborating with upstream and downstream companies as well as for internal value chain integration. This definition is gradually formed through continuous e-business practice and 'learning by doing'.

However, most employees' understanding of e-business has not changed accordingly. They still regard e-business as B2B. This refers to managing relationships between Founder and its distributors or other sales channels. This understanding was still based on the e-business definition proposed by Founder in 1999.

Overall, Founder has little interest in defining concepts. Rather, it enforces the use of information systems to solve specific problems. For example, Founder has divided its

application systems into several categories according to the characteristics of these systems. However, they have not bothered to name these categories. One example was given by the interviewee:

> *In 1999, B2B was adopted to solve the management problems accompanying the company's rapid growth at that time. Founder named this application as e-business because many other companies were claiming that they were doing e-business.* (Founder1, visit1)

8.3.2 Main e-business applications

Overview of e-business applications at Founder

Founder1 gave an overview on Founder's e-business applications:

> *In Chinese PC manufacturing industry, different types of companies have different key concerns. For instance, Dell's feature is highly efficient operations; Apple's feature is differentiated products; Digital China has advantages in sales channel management; while Founder pays high attention to operations and value chain management. Basically, the companies who focus on the value chain management also pay high attention to operation management. This type of companies shares a few key common concerns: procurement, production, logistics, and sales. Logistics is usually outsourced. Consequently, e-business applications concentrate on these key areas: e-procurement, distribution management system, and internal operational management.* (Founder1, visit1)

Key concerns are the processes of plan and production, especially the operations that are connected to the procurement and distribution systems. As logistics are usually outsourced and high efficiency can be achieved through outsourcing, the overall concern is to integrate three other key e-business applications: e-procurement, the distribution management system, and internal operation management.

The objective of e-business applications is to smoothly run the whole value chain. After over ten years of information system construction, Founder has adopted many information systems to manage its activities along the value chain. Details of the main e-business applications are as follows:

B2B application to suppliers and dealers

The B2B application was adopted by Founder in 1999. This was first used in the conducting of business transactions between the company and its dealers. At that time, Founder was experiencing rapid growth. Accompanying it, many management problems arose. Founder decided to use information systems, which were later named as 'e-business', to solve these problems. Next, the B2B application was expanded into web-based collaborations between the company and its dealers. In 2002, the collaboration relationships were extended to include upstream companies. In 2004, Founder further expanded B2B-based collaborations within the whole value chain as a direct response to the requirements of business operations and of the executive of supply chain management. B2B-based coordination is a well accepted trend in the IT industry because of fast lead time required.

Currently, the management and the communication between Founder and its suppliers and dealers are mostly operated via websites. Founder1 commented on the function of these websites:

> *These websites are not enterprise information portals (EIP) because they are specific to certain users. The business operation of the suppliers and the dealers are quite different. So a different set of systems is designed to manage the suppliers and the dealers respectively.* (Founder1, visit1)

Automate sets of business processes

Parallel with the B2B application, Founder has adopted many systems for its internal

business operations. These systems are centralised through Microsoft's integration platform. Meanwhile, Founder has adopted many other information management systems, which are not related to e-business according to the interviewee's viewpoint. For example, the computer assisted product development system has greatly improved the speed of product development.

Founder1 gave his understanding of the management in the sector:

> *A management style which is too complicated is not suitable for IT industry because the core feature of this industry is speed.* (Founder1, visit1)

Founder develops application systems in-house because they know exactly what the key concerns of the applications consist of. For example, the designers in the company know that the management of business flow and files is more important than data management within the company. This is because not so much business data is involved in the business process.

8.3.3 The challenges of e-business applications

The most challenging part of managing e-business in Founder is described as follows by Founder1:

> *To smoothly run the whole value chain is difficult to achieve because information has been modified before it is transferred to business partners. As a PC manufacturer, Founder has to coordinate with many small suppliers. The company uses a website to manage these suppliers. Through the website, we can obtain suppliers' inventory information. However, the upstream and downstream partners are unwilling to disclose accurate information in real time. The information received is then modified. This is the difficult part of managing information.* (Founder1, visit1)

Founder had to modify the information received from its suppliers and customers before

inputting a piece of information into its own information systems. Only then did the modified information flow along Founder's internal information systems.

Founder needed to modify its own information before passing it to its business partners. A good example is given by Founder1:

> *Taking procurement as an example, Founder needs to make plans and place orders to suppliers, and needs to simultaneously share plans with its dealers so that they can be prepared to sell the new products. At the same time, Founder needs to keep a certain level of confidentiality of information within the whole process. For example, Founder needs to modify such information such as customers' special requirements and the scale of productions before it can be passed to the suppliers.* (Founder1, visit1)

Within the whole communication process, information needed to be modified continuously. To counter this problem, Found1 suggested:

> *During the information exchange process, companies have to build mutual trust to get relatively more accurate information. In reality, it is not possible to realise the real time communication along the value system. The more pragmatic approach is to modify received information before using it.* (Founder1, visit1)

Founder1 summarised the fundamental challenge of e-business applications:

> *Fundamentally, the problems of IT application come from enterprise administration management. Issues such as the recognition of the importance of IT and cultivating employees' IT capability belong to corporate management.* (Founder1, visit1)

In conclusion, the case of Founder has demonstrated a key challenge during the process of realising e-SCM/VCM: the trade-off between information sharing and information confidentiality. The core management requirement is to build up trust relationship with business partners.

8.3.4 E-business applications' impacts

E-business evaluation was regarded as not important. Founder1 gave the explanations:

> *It is difficult to calculate the influences of e-business from quantitative perspective. For example, sometimes the importance of e-business applications is to improve efficiency rather than save cost. In this situation, it is not possible to calculate the return on investment accurately. Usually, the decision to adopt a new information system mainly depends on its influence on the business development. If from a business development perspective, an investment is necessary and practical, Founder will invest in the information system. Evaluation has little influence on Founder's decision on e-business applications.* (Founder1, visit1)

E-business' impacts on competitive advantage

Founder1 commented on Founder's competitive advantage:

> *Founder has advantages in channel management and brand name. Founder has stable channels. In Chinese markets, which are Founder's main markets, customers trust Founder's brand. However, these are not necessarily sustainable competitive advantages. In the PC manufacturing industry, few Chinese enterprises have built their success on differentiation as Dell and Apple have. Mainly, Chinese companies' relative advantages are derived from their comprehensive capability.* (Founder1, visit1)

In Founder, e-business plays an important role in dealer management. Founder's information system for dealer management has some special features such as the capability to strengthen dealers' differentiation and the advantage of providing training for dealers. In addition, e-business applications have facilitated close collaborations with upstream and downstream companies and made communication easier. This, in turn, leads to the improved efficiency of internal operations. Founder1 commented:

IT is a tool and its value can be realised only through business operations. Personally, I would like to support the view that IT can provide support to the implementation of new management concepts rather than create new value. Usually, after adopting an information system, an enterprise may improve its efficiency in certain areas and gain relative advantages in certain period of time such as three months or one or two years. (Founder1, visit1)

Impacts on organisational structure, culture, and the industry

Some small adjustments have been made to Founder's organisational structure. Founder1 explained:

> *The fundamental redesign of organizational structure is not possible because organizational structure is fundamentally derived from business operations.* (Founder1, visit1)

The e-business adoption has little impact on Founder's organisational culture except that communication among employees is more convenient than before.

8.3.5 Founder's e-business strategy

Founder's overall IT strategy is to support its corporate strategy. Founder makes an IT plan every two or three years. Meanwhile, the IT plan is readjusted on a yearly basis. The current IT plan is concerned with improving the efficiency of the VCM and achieving e-SCM/VCM. Founder1 commented on the relationship between IT plan and corporate plan:

> *A company's core information systems can not be many. If a company's overall strategy hasn't been changed radically, nor will its IT strategy. Enterprises should first have a set of advanced management systems, then using appropriate information systems to support these management concepts.* (Founder1, visit1)

8.4 Southern Telecommunication Equipment Corporation (STE) [pseudonym]

8.4.1 Company background

STE is a publicly listed corporation whose core business is to design, develop, produce, distribute, and install a broad range of telecommunications systems and equipment. Also included are wireless communications systems, wire-line switch and access equipment, optical and data communications equipment, handsets and telecommunications software systems and services.

STE is one of the leading suppliers of telecommunications equipment in China's telecommunications market and has also gained access to the global telecommunications market, especially in emerging markets.

Domestically, the corporation has gained its market share by way of its strong brand name, high performance to price ratios, and effective marketing strategies. In the global markets, the corporation has achieved significant sales growth in recent years, which provided a major driver for its business growth.

In 2004, STE's turnover was RMB¥ 21,220 million and had a total of 25,515 employees.

In 2009, STE's turnover was RMB¥ 60,273 million and had a total of 70,345 employees.

As a Chinese high technology enterprise, the company placed much emphasis on product research and development, especially on the development of core technologies to its core products. STE also put great efforts into improving its operational efficiency and product quality. STE aims to become a world-class excellent enterprise in 2015.

In the domestic market, competition among domestic telecommunications service providers is intense, with the competition feature changing from resource monopolising to being led by technology and service. At the same time, the market features globalisation which creates both new business opportunities and more intense competition and challenges for the Chinese telecommunications equipment

manufacturers. In response to the changing market environment, STE implemented a product differentiation strategy and established strategic cooperation relationships with customers. Meanwhile, the company adopted business expansion strategy both at home and abroad.

STE is held as a role model of IT innovation in China. STE2 explained his understanding of e-business as follows:

> *In China, e-business is officially named as 'enterprise informationalisation or digitalisation'. The application of e-business is to solve the relationship between business operation and IT so that enterprises can make profits. The essence of e-business is electronically based commercial processes. One distinctive feature of the Internet adoption is that the scope of information system application has been broadened from electronic calculation to digitalised information.* (STE2, visit1)

While STE1 understood e-business as:

> *.....a main management tool to realize the management concept of 'virtual organisation' which refers to formulating strategic partnerships with suppliers and customers.* (STE1, visit1)

After implementing the concept of virtual organisation, STE can share business plans or other information simultaneously with its suppliers. This capability leads to improved efficiency and quick response to markets. However, in practice, virtual organisation is difficult to achieve; the process of setting up the connections and achieving balance between manufacturers and suppliers is an elaborate and time-consuming process.

Both STE1 and STE2 agree that:

> *E-business is a must-have option if enterprises want to improve their efficiency and logistic management.* (STE2, visit1)

8.4.2 Main e-business applications

Overview of the e-business applications in STE

Two employees were interviewed in 2005: STE1 being an e-business engineer from one of the subsidiaries of STE; STE2 being the IT manager of STE's IT centre at the company's headquarters. The subsidiary is responsible for raw material procurement and production. Consequently, its e-business applications focus on managing suppliers.

IT has been applied along the group's whole value chain, including procurement, research and development, production, sales, after sales service e.g. CRM system, collaborative product commerce system, and ERP system. The subsidiary uses the same IT systems as its parent company with the exception of the ERP system, which was developed in-house by the subsidiary with its business process being very specific. STE1 introduced the key e-business applications within STE and the reason that e-business applications are not suitable for sales management:

> *E-business is mainly applied for procurement in our company. In terms of sales management, e-business is not so useful. This is decided by the features of our products. As telecom-equipments are high in value. Typically, a customer may buy just one product in a year but pay over US$10 million or even a few billion US$. Hence, communication with customers before purchase is very important. And a sales representative will do this job better than using e-business systems.* (STE1, visit1)

B2B: E-procurement

In STE, the procurement system is managed by two departments: 1) the supply department is responsible for placing orders to suppliers; 2) the supply chain management department provides supportive services to the supply department.

An e-procurement website, EDI systems, and ERP systems have all been used for the procurement. EDI systems or ERP systems are used to connect with large international

suppliers, while, the e-procurement website is used to place orders to other suppliers.

After more than two years of application, the e-procurement application in the subsidiary was still in its initial stage. The main function was information exchange, which included placing orders and collecting feedback on orders. The transaction process was conducted through emails and/or faxes. Nonetheless, some other functions such as alliance inventory management and supplier inventory management have been added. The subsidiary has required its suppliers to apply these systems so that information can be exchanged in a timely manner.

STE1 commented on the difficulty in obtaining information from suppliers in real time:

> *In reality, it is not easy to achieve virtual integration because of the trust issue. Also, whether a supplier would like to fully co-operate with us depends on the power relationship. If we have stronger bargaining power over the suppliers, they will meet our requirements. Otherwise, they will operate in their own way.* (STE1, visit1)

STE1 gave his opinion on the applications of EDI and e-procurement:

> *The supply chain management website (or the e-procurement website) is more suitable for medium-sized suppliers rather than large suppliers. For the latter, EDI is more popular.* (STE1, visit1)

The subsidiary has not yet optimised its supplier network. Currently, cost is the main criterion for choosing a supplier. If a supplier can offer very low prices, the company will cooperate with this supplier even if it has not yet adopted e-business. The e-procurement application has not significantly changed the cooperation relationships between STE and its suppliers. STE has kept its procurement operations on both online and offline channels and there appeared to be no conflict between these channels.

Internal administration: automate sets of business processes

STE has applied many information systems for internal operation management such as

HRM, KM, and EIP. These systems can all be accessed via the Intranet. These systems were developed in-house. The KM platform has been used to manage files, enterprise standards, and e-learning.

8.4.3 The challenges of e-business applications

STE2 gave his view on the challenges of e-business management:

> *During the process of e-business implementation, difficulties became apparent with the optimisation of business processes. This was mainly because too many areas were involved.* (STE2, visit1)
>
> *It would be easier if the necessity of business process restructuring could be prevented before applying e-business. Meanwhile, when the enterprise was centralising its information systems, the problem of legacy systems arose.* (STE2, visit1)

8.4.4 E-business applications' impacts

STE2 explained the situation of e-business evaluation in STE:

> *Before investing in an information system, STE will conduct an investment analysis. The evaluation of the overall e-business application is difficult and not necessary because all the large enterprises in our industry have to use information system. Most large enterprises that focus on research and development or manufacturing have to apply e-business.* (STE2, visit1)

E-business applications' impacts on competitive advantages

STE's competitive advantage arose from its research and development capability, as well as low cost and diversified integrated telecommunications networking solutions.

Although STE's technology appears to have fallen slightly behind other international renowned companies, such as Cisco Systems, its products do have a high performance-price ratio.

E-business is a must-have option if companies want to improve their efficiency and logistic management in the sector. Meanwhile, e-business applications have contributed to cost reduction and value creation. For instance, through the supply chain management website, STE is able to get more accurate information such as the date of delivery from suppliers. As a result, the company stands in a better position for making business plans.

Impacts on organisational structure, culture, and the industry

After the e-business adoption, STE cut one department. There were also subtle re-adjustments in some other departments. The adoption of the supply chain management website in the subsidiary caused no changes to the organisational structure, although a virtual team was established to carry out the project. On completion of the project, the virtual team was then disbanded.

E-business applications have little influence on organisational culture but do have an impact on industry structure. For instance, STE requires its suppliers to connect to the Internet and to respond to STE quickly so that STE can achieve zero inventory operation.

8.4.5 STE's e-business strategy

Overall it can be seen that STE's e-business strategy is to support its corporate strategy and to provide system support to the company's global expansion strategy.

8.5 The comparison of the case companies

8.5.1 The understanding of the e-business concept

Table 8-1 illustrates the understanding of the e-business concept in our four case companies. Based on the views of the interviewees, the e-business concept includes at least three perspectives (see Table 8-1: key concepts):

1) the applications for the internal business operations;
2) the collaborations with upstream and downstream business partners;
3) the B2C applications.

According to their understanding, the most important function of e-business in the industry is to formulate relationships or collaborations with business partners. The followings are their expression; e-business is:

> *the collaborations with upstream and downstream companies* (Haier2, visit2)
>
> *using information systems to maintain relationships with dealers and suppliers* (TCL1, visit2)
>
> *a web-based collaboration platform* (Founder, visit1)
>
> *formulating strategic relationship with suppliers and customers* (STE1, visit1)

TCL1 named the 'collaboration' function as B2B. Both TCL1 and Founder1 thought that the Internet-based B2B application was only a progression from previous information technologies given the factor that e-business is the most effective way (see Table 8-1: key features).

Founder1 defined 'collaborations' as 'business transactions' and 'communication'.

STE2 concluded that e-business was 'electronically based commercial processes'. He contended that in the Chinese business context e-business is officially termed 'enterprise informationalisation or digitalisation'.

The cases share a commonality with their use of e-business in order to improve supply chain management (see Table 8-1: key assumptions). For example, TCL1 provided his

own vision of future e-business development: "*to generate an information system from the whole supply chain perspective* (TCL1, visit2)". They also share the view that the key concern of e-business application is to provide deep-level business support to business flows (see Table 8-1: key concerns).

Table 8-1: The understanding of the e-business concept

	Haier	TCL Electrical	Founder	STE
Key concepts	Internal operations and collaborations with business partners.	B2B and B2C.	Web-based collaborations.	Enterprise informationalisation; strategic partnerships with business partners.
Key assumpt-ions	1) E-business can play a strategic role; 2) Customers are not fully ready for B2C.	1) Improving supply chain management is the key; 2) Customer acceptance is the precondition of B2C adoption.	Define e-business as managing the whole supply chain/value chain electronically.	1) E-business is a must-have option to improve supply chain management; 2) E-business is a main management tool to realize virtual organization.
Key features	E-business includes two perspectives: (a) the applications inside the company; (b) the collaboration with upstream and downstream companies.	1) E-business includes B2C and B2B; 2) B2B refers to using information system to maintain relationships with dealers and suppliers; 3) E-business is the most effective IT applications.	E-business definition is evolving from B2B to e-business system and then e-business, referring to electronically manage the whole supply chain.	1) The core of e-business is electronically based commercial processes; 2) E-business extended electronic calculation to digitalisation informating.
Key concerns	Business processes and organizational structure needs to be redefined frequently.	To use e-business to provide business support.	To use e-business technology to solve particular management problems.	To use e-business to support business operation.

Each of the case companies has become well known as a model of technological innovation within its particular sector as expressed by Founder1: "*E-business applications are more advanced and have a longer history in our industry compared with other industries* (Founder1, visit1)". They all initiated e-business implementation around 1999. For these companies, B2B e-business is a must-have option to improve supply chain management. However, the B2C application is not a must-have option. It is only regarded as a tool to improve company image or to enhance the company brand name. The ultimate necessity of B2C adoption depends on the requirements of end consumers. (See Table 8-1: key assumptions)

Among the case companies, only Haier has clearly recognized that to implement e-business at the strategic level, business processes and the organisational structure need to be re-adjusted constantly.

8.5.2 The reasons for e-business adoption

Table 8-2 illustrates the reasons for e-business adoption with regard to the case companies. Fundamentally, the adoption of e-business was based on the necessity of business operations (see Table 8-2: key features). For example, the B2B application has been used to solve management problems of rapid business expansion and forecasting inaccuracy in the supply chain. Rapid business expansion as a key theme has emerged in Chinese enterprises. In response, e-business has become a common management tool to cope with business growth.

They all regarded B2B application as a must-have option in order to survive in the industry (see their expressions as followings):

> *a must-have option.....to stay in the industry* (Haier2, visit2)
>
> *a must-have option.....to improve their efficiency and logistic management (*STE2, visit1)

B2B applications have been exploited in order to achieve certain aims such as fast lead time, close collaborations, and efficient SCM (see Table 8-2: key aims).

The B2C application was not regarded as a key e-business application in the industry because customers are not ready for it. Only Haier has exploited it actively with the aim of improving its brand name and seeking first-mover advantages.

Table 8-2: The reasons for e-business adoption

	Haier	TCL Electrical	Founder	STE
Key factors	1) E-business adoption was based on the extent of urgency from business operations; 2) B2B is a must-have option to survive in the industry.	The necessity of business operations such as business forecasting, expansion & global supply chain management.	Use e-business to solve management problems.	A must-have option to improve efficiency &logistic management.
Key aims	1) B2B: to shorten lead time; to establish close collaborations with business partners; 2) B2C: to improve brand name; to grasp first-mover advantage; to contribute to off-line sales.	1) To improve channel management & to reduce uncertainty. 2) To cope with expansion strategy; 3) To improve global supply chain management.	To solve specific management problems such as to cope rapid business growth.	1) To solve the relationship between business operation & IT; 2) To facilitate the concept of 'virtual organization'.

8.5.3 Key e-business applications

Haier regards customisation and globalisation as its fundamental value sources. The continuous updating of IT and e-business applications had laid the foundation for taking control of these two value sources. Haier's CEO wished to adopt e-business at strategic level. Consequently, the corporation tried to explore all the possible areas within the value system where e-business could add values (i.e. adopting B2B, B2C, and e-business for internal key business processes). By exploiting e-business at a strategic level, Haier would be able to apply new management concepts such as 'market chain management' which have changed the relationship between staff from superior-subordinate to market-oriented. This would then lead to the conversion of every employee to an independent and innovative manager with his/her own balance sheet.

In Haier, e-business has been applied in the following basic blocks:

Haier has put a lot of effort into channel management, which was called as CRM system or e-CRM. This system includes two functions: online order facility and dealer inventory management. E-CRM has been used to manage big dealers and important customers. The dealer inventory management system and online order facility contribute to speed-to-market as Haier can get sales data from dealers with high speed

and improved accuracy. E-CRM and offline CRM have been operated at the same time to cope with some big dealers' outdated information systems.

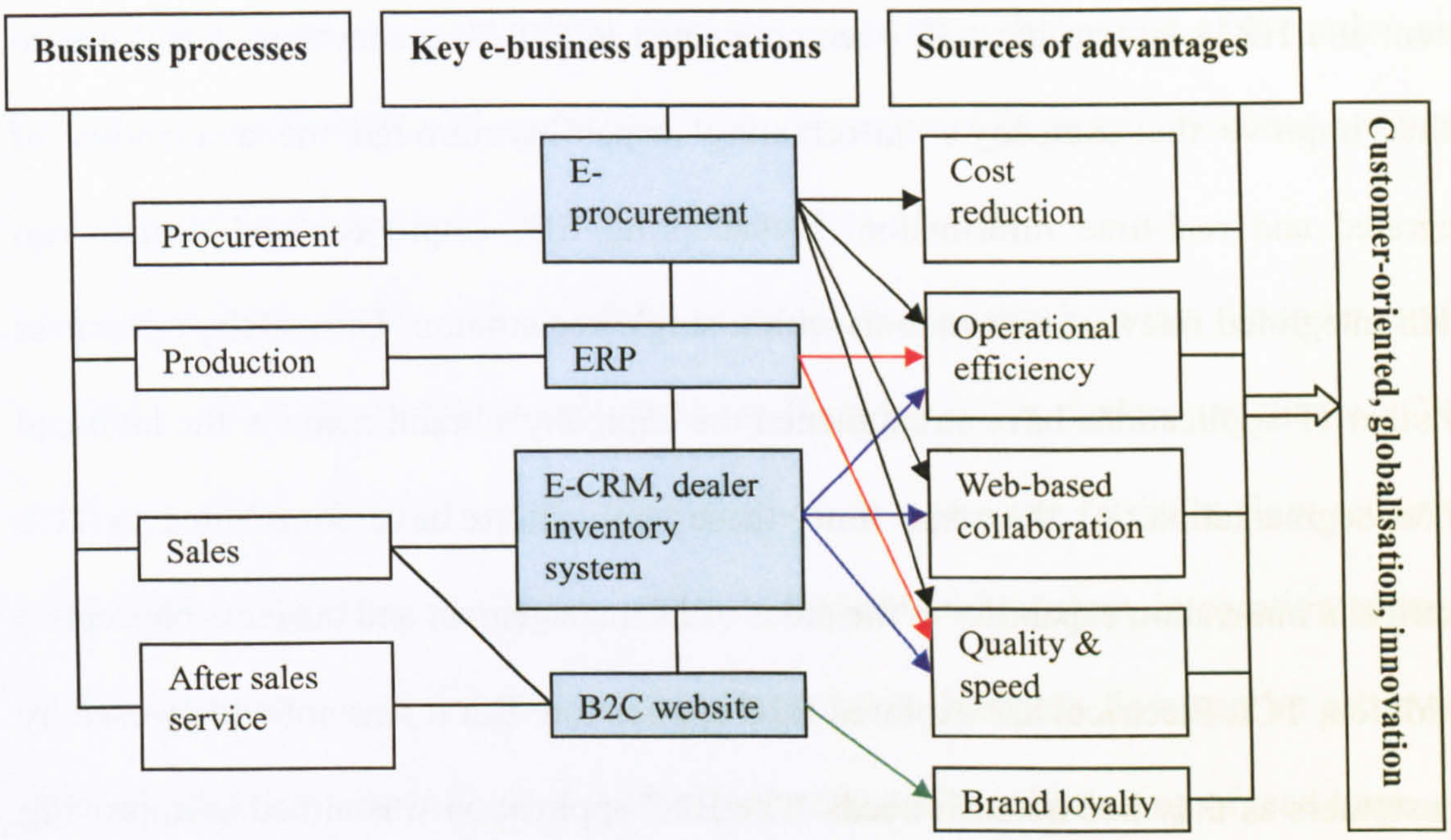
Haier has actively explored the e-procurement application. During the process, its supplier network has been significantly optimised. Meanwhile, Haier was able to purchase raw materials in a global market and build partnerships with large global suppliers. For instance, suppliers can view Haier's orders directly. Then they can co-develop products with Haier. In addition, significant cost reduction was achieved.

Haier has become a pioneer in terms of the B2C application in the manufacturing industry. Their central aim was to promote brand loyalty and attract new customers in the remote rural areas. They also hope to seek first-mover advantages when the B2C market is mature.

Together with its e-procurement system, ERP system, and e-CRM, B2C application facilitated made-to-order model through the availability of real-time data.

In addition, as a large corporation with a strong brand name, Haier had stronger bargaining power over its business partners in the industry value chain. The combination of this and its e-business application leads to the feasibility of 'three zero management', which refers to zero stock, zero logistics, and zero working capital. Figure 8-1 illustrates the key e-business applications and their related advantages within Haier.

Figure 8-1: Key e-business applications and their related sources of advantages within Haier



In TCL Electrical, the key concern of e-business application is to provide deep-level business support to its business flow (along the whole supply chain). This reflects on the central aim of e-business applications which try to achieve 'informating'. This refers to the availability and integration of business information inside the company and between the company and its business partners along the value chain. The final aims of the applications are to facilitate collaboration with business partners and to realise e-SCM. The key e-business applications that have been adopted in order to achieve these aims are:

Channel management which includes sales channel management and internal channel management. By operating order settlement and exchanging business information online with dealers and sales branches, TCL Electrical was able to achieve improved online information sharing and dealers' business operation. By using the IT business support system, TCL Electrical shortened its order handling time.

The adoption of an e-procurement system has contributed to significant cost saving. During the process, TCL Electrical has optimised its supplier network. However, what concerns them is that online auction could damage collaborations between TCL

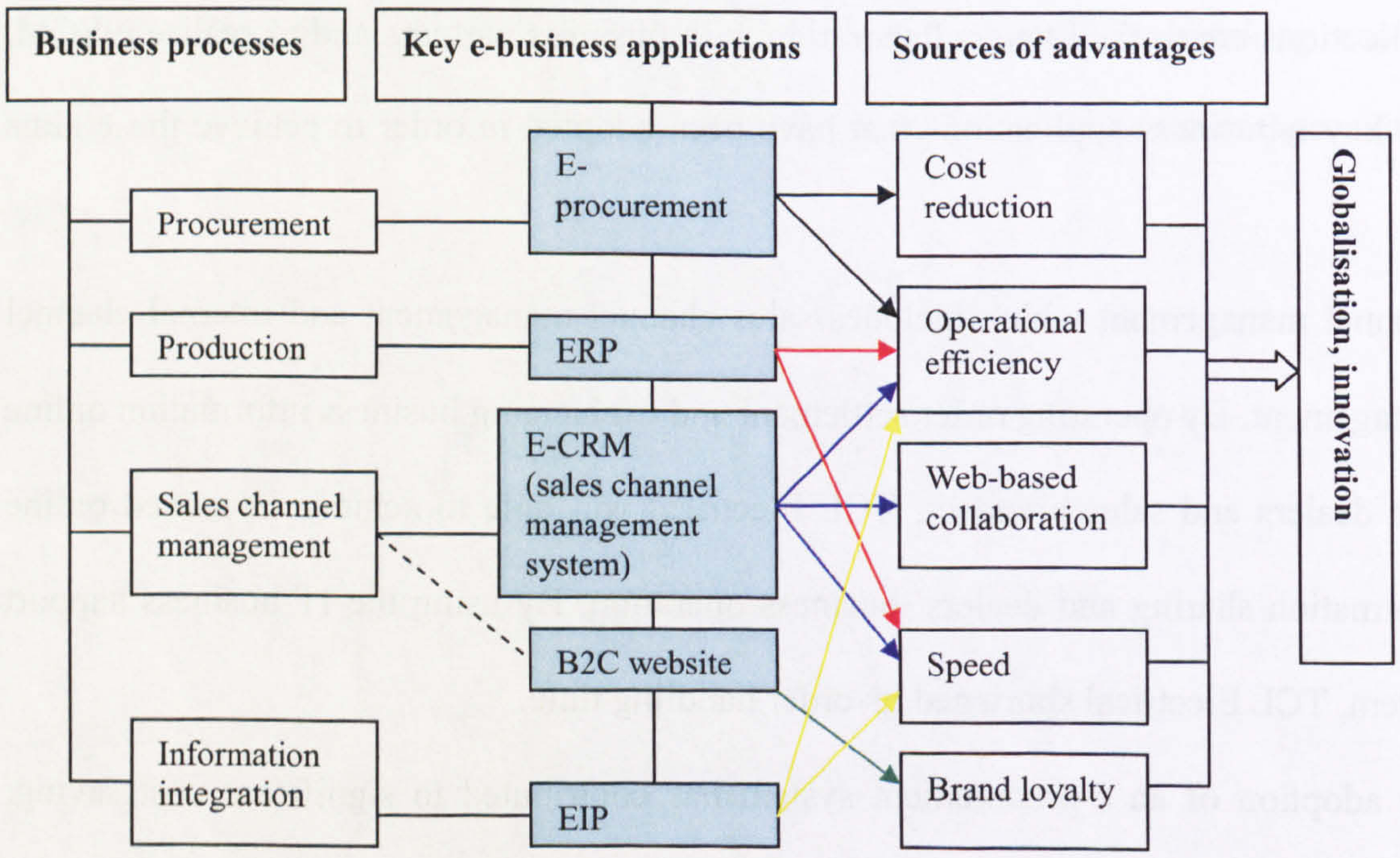
Electrical and its suppliers as the cost reduction put too much pressure on suppliers.

Since the second half of 2004, the channel management system, ERP system, financial system and HRM system have all been connected to EIP. The adoption of EIP was to further improve the company's 'informating' capability through the availability of integrated and real-time information. By adopting EIP, employees and dealers can obtain integrated relevant information with a single registration. Ultimately, e-business and other IT applications have strengthened the company's brand name in the high-end market segmentation. At the same time, these applications have contributed to TCL Electrical's innovation capability in the areas of IT management and business concepts.

In addition, TCL Electrical has explored B2C application. But it was not widely used by its customers as they had no such needs. The B2C application was aimed at improving TCL Electrical's brand name in technological innovation.

Figure 8-2 illustrates the key e-business applications and their related advantages within TCL Electrical.

Figure 8-2: Key e-business applications and their related sources of advantages within TCL Electrical



As a company in the PC manufacturing sector, Founder's key concerns are operational

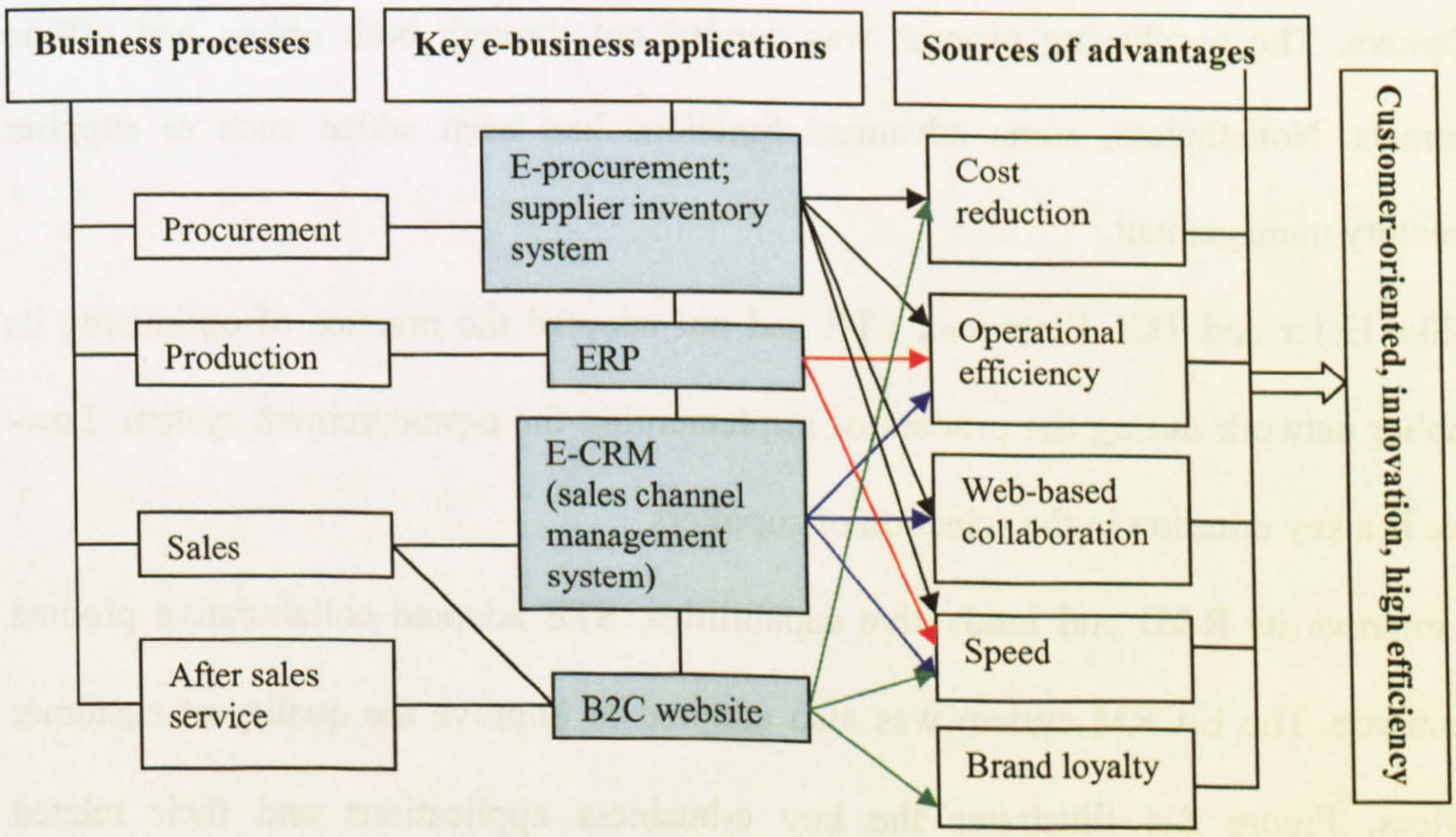
efficiency and the value chain management (or SCM). Consequently, its e-business applications were concentrated on several key business processes along the value chain: procurement, production, and sales. The aim is the smooth running of the value chain through the integration of these key business processes. Ultimately, Founder can master the critical success factor in the sector i.e. speed-to-market.

E-business applications are evolving from e-transactions between Founder and its dealers to web-based collaborations between Founder and its dealers and then e-SCM.

In Founder, the e-business application focuses on managing business flow rather than data mining. Founder attempts to achieve this through system integration along the value chain. As a result, smooth management of its business flow can be achieved as well as effective communication with its partners, and the shortening of lead time.

In terms of B2C application, Founder has launched a B2C website (http://shop.foundertech.com/) to sell its own branded PCs, digital products and office equipments. The website also provides online customer services. Figure 8-3 illustrates the key e-business applications and their related advantages within Founder.

Figure 8-3: Key e-business applications and their related sources of advantages within Founder



After years of high-speed growth in the industry (from the late 1990s), China's telecom

industry has entered a stable growth phase. China's telecom-equipment manufacturing industry was facing intensive competition from both domestic and global players. The competition base changed from monopolising resources to the advantages in technology and services. In response, STE adopted a differentiation strategy through the improvement of its research and development (R&D) capabilities and the adoption of growth strategy, especially in emerging markets, and thus forming strategic partnership through collaboration with key customers. In addition, to achieve high performance to price ratios, STE determined to improve its product quality and operational efficiency. The central aim of the e-business application here is to support improvement in product quality and operational efficiency as well as global growth strategy. The method adopted was an informating process which was defined as "*electronically based commercial processes and digitalised information* (STE2, visit1)".

As a leading Chinese high-technology company and a role model for IT innovation, STE has been actively exploring e-business along the whole value chain. A subsidiary was established especially for internet-based supply chain management. E-procurement became the key adoption in this subsidiary. However, up until 2005, e-procurement application was in the initial stage, featuring effective information exchanges with suppliers. The purchasing process was carried out through both online and offline channels. Nonetheless, some advanced functions had been added such as supplier inventory management.

Unlike Haier and TCL Electrical, STE had not adopted the practice of optimising its supplier network during the process of implementing the e-procurement system. Low-price is a key criterion in the selection of suppliers.

To improve its R&D and innovative capabilities, STE adopted collaborative product commerce. The E-CRM system was also adopted to improve the quality of customer services. Figure 8-4 illustrates the key e-business applications and their related advantages within STE.

Figure 8-4: Key e-business applications and their related sources of advantages within STE

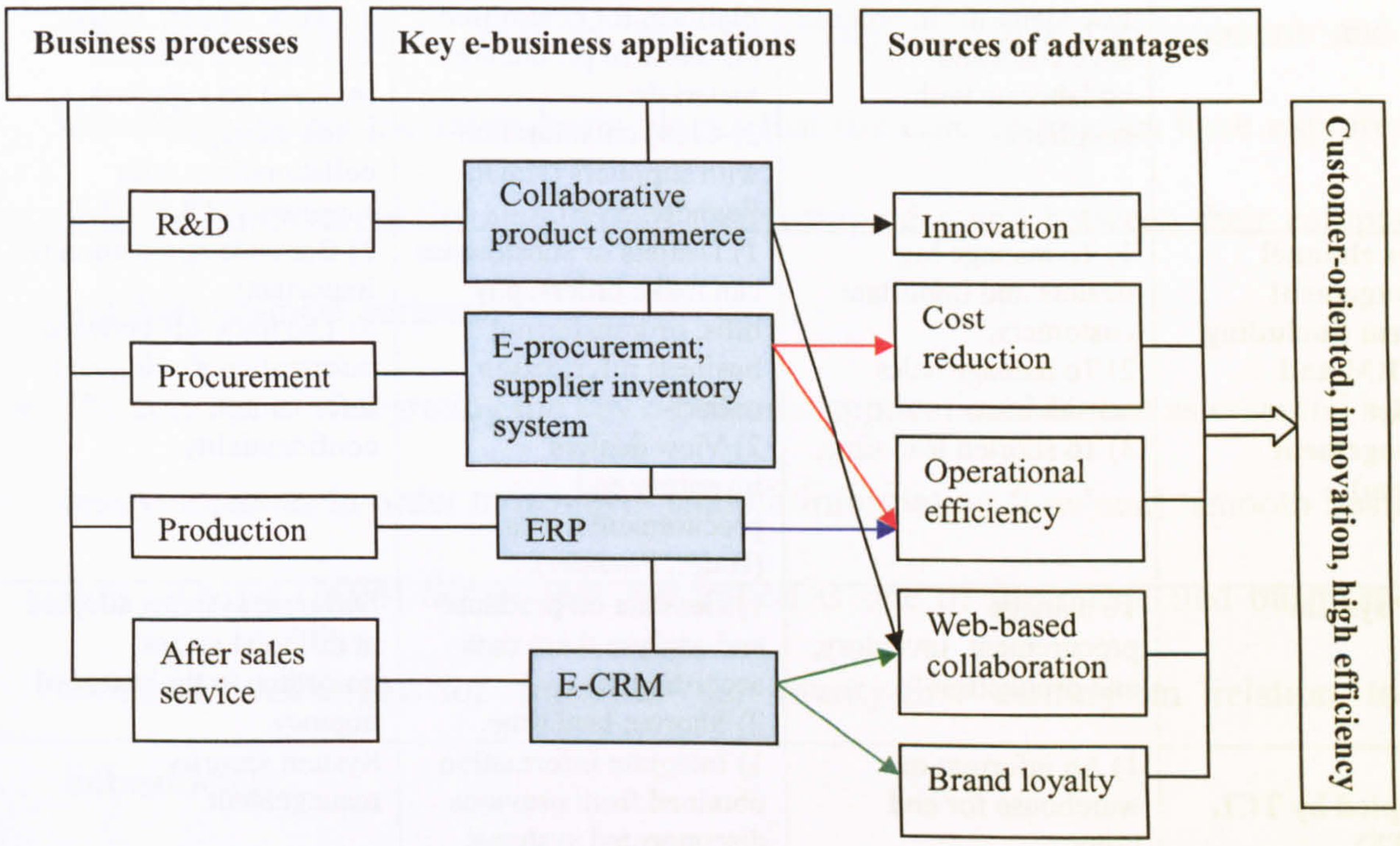


Table 8-3 summarises the aforementioned key e-business applications adopted by the case companies within the manufacturing industry.

Comparing Table 8-3 and Figure 8-1, 2, 3, 4, the following key similarities shared by the case companies can be identified:

Table 8-3: Key e-business applications adopted by the case companies within manufacturing industry

	Aims & Objectives	Key applications	Key concerns
E-procurement	A platform to purchase raw materials in order to save costs and collaborate with suppliers.	1) Internal procurement platform for centralised purchase of production materials; 2) Close collaboration with suppliers (Haier, Founder, STE).	1) Optimise supplier network (Haier; TCL); 2) The price pressure imposed on suppliers could damage collaborations with suppliers (TCL).
Sales channel management system (including E-CRM and Dealer management system)	1) To manage big dealers and important customers; 2) To manage sales subsidiaries; 3) To shorten lead time.	1) Dealers or subsidiaries can make orders, pay bills, or transferring business information online; 2) View dealers' inventory and procurement needs (Haier; Founder).	1) Bar code application is important; 2) The trade-off between information sharing and information confidentiality.
ERP system	To manage procurement, inventory, and production.	1) Get data on products and analyse these data accordingly; 2) Shorten lead time.	Different systems adopted at different stages according to the extent of urgency.
EIP (adopted by TCL & STE)	1) An information warehouse for end users; 2) To improve business operation efficiency and IT operation efficiency.	1) Integrate information obtained from previous disconnected systems; 2) Get relevant information with single registration; 3) Strict control over access rights.	System security management.
B2C website (Adopted by Haier, TCL, & Founder)	1) To sell own branded products; 2) To improve brand name and provide better customer services.	1) Marketing-related activities; 2) Online transactions (Haier, Founder); 3) Online customer service.	1) Delivery issue; 2) Customer acceptance.

- Intensive price competition and globalisation are the key trends in the markets. In order to manage these changes, the concept of 'e-business enabled value chain or supply chain management (e-VCM or e-SCM)' has been adopted by all the case companies. The application has led to improved operational efficiency, fast lead time, and cost reduction. For example, ERP has been adopted by all the case companies to increase efficiency. By integrating the ERP system with other e-business applications such as channel management systems and e-procurement, e-SCM has provided case companies with accurate data on procurement, inventory, and production management.
- When exploring the possibility of e-business application, these case companies used

the taxonomy of the value chain framework proposed by Porter (1985). The five primary activities (inbound logistics, operations, outbound logistics, marketing and sales, and service) as well as two secondary activities (procurement and IT infrastructure) are the seven basic blocks that the case companies have explored in order to improve the linkages within their companies and between their companies and their business partners.

- The concept of 'integrating the key e-business applications' is seen as essential by the case companies in order to achieve 'smooth information flow' and 'smooth business flow'. Currie (2004) argues that integration is one of the most cited business and technical challenges for firms in the twenty-first century in relation to IT infrastructure.
- Web-facilitated collaboration between companies and their business partners is another key management concept that these companies wished to exploit. Different e-business applications have been used to enable collaboration. For example, through e-procurement adoption, some suppliers can view Haier's order directly and then co-develop products with Haier. Meanwhile, through e-CRM, Haier can view dealers' inventories and sales data directly. As a result, Haier is able to replenish products in less time (see Figure 8-1 and Table 8-3). By adopting EIP and e-CRM, dealers can view TCL Electrical's inventory relating to their orders and TCL Electrical's price and market policies. This information helps to improve dealers' business operation (see Figure 8-2 and Table 8-3). Founder has implemented e-procurement and a dealer management system as collaboration platforms. The collaborations include business transactions and communication (see Figure 8-3). STE has adopted collaborative product commerce to collectively design products with supply chain partners. By implementing e-procurement, STE can realise alliance inventory management with suppliers (see Figure 8-4).
- Using e-business systems to manage sales and distribution channel is a key

application within the industry (see Table 8-3). The web-facilitated collaboration between these companies and their business partners is a key success factor within the industry.

- All four case companies have grasped the great opportunity of exploiting the 'informating' capacity brought about by the Internet. 'Informating' is a fundamental feature of IT suggested by Zuboff (1988). Zuboff (1988, p.10) explains 'informate' as IT's capabilities of producing action as well as generating information about the underlying productive and administrative processes. As a result, IT provides a deeper level of transparency to activities that had once been either partially or completely opaque. For many Chinese enterprises, e-business adoption and 'informating' are developed simultaneously. As described by STE2: "*In China, e-business is officially named as 'enterprise informationalisation or digitalisation* (STE2, Visit1)". Here, 'informationalisation' has the same meaning as 'informate'. For example, all the case companies have improved their IT infrastructures and used information systems to automate and streamline their internal administrative management. For instance, KM system, HRM system, and financial management system, etc. have been adopted. They also wished to integrate these internal systems for internal efficiency and controls.

At the same time, some key differences have emerged in these cases:

- Benefits gained from the e-procurement application are diverse. Haier has explored e-procurement to achieve multiple benefits: cost reduction, high operational efficiency, web-enabled collaborations, and improved quality and speed. Moreover, the application has contributed to the implementation of a 'made-to-order model' and 'mass customisation'. In TCL Electrical, the key benefit of e-procurement was found to be in cost reduction. Although TCL Electrical was able to optimise its supplier-network during the process of implementing the e-procurement system, this failed to lead to improved collaboration between the company and its suppliers. On the

contrary, as suggested by TCL1, e-procurement could in fact damage previous collaborations as too much pressure was put on suppliers to reduce their costs. In Founder, the key benefits of e-procurement appear to be the facilitation of web-enabled collaboration and increase plan accuracy as well as fast lead time (speed) and operational efficiency. Although STE has achieved cost reduction and web-enabled collaboration as Haier has done, STE appears to have no clear intention of using e-procurement to facilitate new management concepts.

- Attitudes towards the necessity of B2C adoption differ. Haier has actively explored B2C application in order to promote its brand loyalty, provide better customer service and attract new customers in remote rural areas. In TCL Electrical, B2C application has been adopted but only functions as an online catalogue. This is because the main aim was simply to improve the company's image rather than to sell products. Founder has actively explored B2C in recent years. Its B2C website sells its own branded products and provides online customer care which can lead to increased brand loyalty. In STE, B2C application was not regarded as crucial in e-business applications.

In combining the key similarities and differences, the following can be concluded:

The greater possibility of connectivity, interactivity, and the currency and availability of information, then makes room for more comprehensive analysis and use of data in order to support business decisions and to exploit linkages which include managing trade-offs and coordination along the value chain. It is through the latest ways of managing linkages that e-business is able to generate sources of sustainable competitive advantage. Hence, in the value chain framework, linkages clearly need to be taken into consideration. Together with the four basic building blocks adopted by the case companies (see Figure 8-1, 2, 3, 4: procurement, production, marketing and sales, and service), it is possible to draw a typology of an e-business facilitated value chain within the Chinese manufacturing industry (see Figure 8-5).

Figure 8-5: E-business facilitated value chain within the Chinese manufacturing industry

E-procurement	Flexible manufacturing	Online marketing & e-CRM; B2C	E-CRM
Information flow/linkages			
IT facilitated R & D			
E-HRM			
Firm infrastructure, including IT infrastructure			

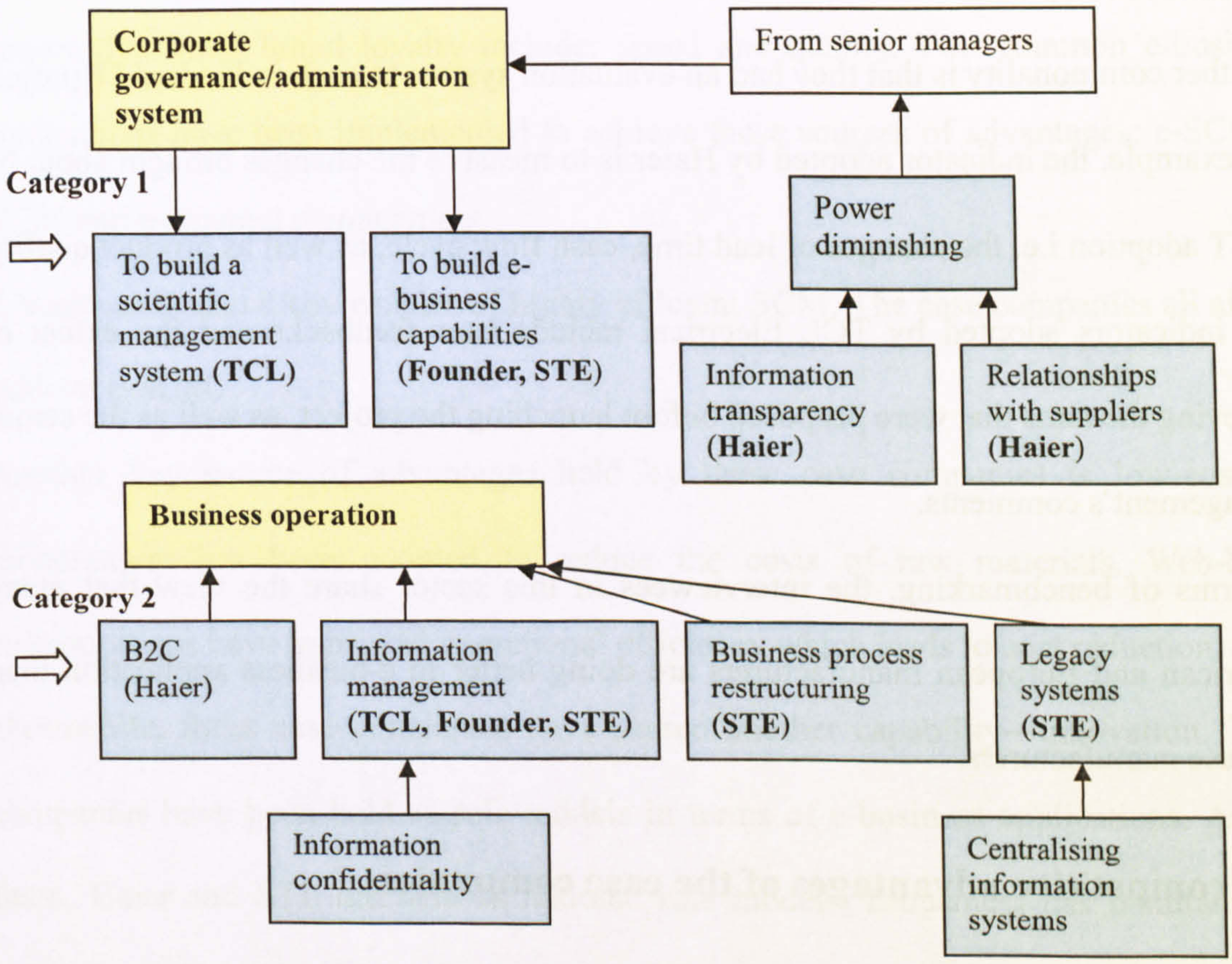
8.5.4 The challenges of e-business adoption

By analyzing the case companies, the obstructions of e-business application came from two basic categories (See Figure 8-6):

- *The corporate governance/administration system*. TCL1, Founder1 and STE2 have all cited this as a fundamental obstruction. For example, as TCL1 said: "*The establishment of a rational or scientific management system is the foundation of applying e-business at the higher level or at strategic level i.e. supporting strategic positioning.* (TCL1, visit1)" Both Founder1 and STE2 expressed that the corporate administration management system is the foundation on which companies can build e-business capabilities such as recognising the importance of IT and cultivating employees' IT capabilities. The underlying reason for the difficulty to change the corporate governance/administration system is the reduction of power held by some senior managers. Haier also encountered this problem. Information transparency and the removal of small suppliers who have outdated IT capabilities are the two factors that led to the diminishing of power held by some senior managers. Consequently, these managers are not likely to support the changes.
- *Business operation*. Under this category there are four subcategories of obstructions: (a) B2C operation: the obstructions include online and offline channel conflicts, limited coverage of delivery network and customer acceptance (Haier); (b)

information management along the value chain: the obstructions came from business partners' concerns on their information confidentiality (TCL Electrical, Founder, STE); (c) legacy systems when centralising information systems (STE); (d) restructuring business process: the need of restructuring business process during the process of implementing e-business led to difficulty.

Figure 8-6: The challenges of e-business applications



8.5.5 The impacts of e-business applications

The evaluation of e-business applications

One commonality shared by the case companies is that there is no overall evaluation towards e-business investment/performance. The interviewees explained the reasons:

> *There is no need for a formal overall evaluation.* (TCL1, visit2)
>
> *It is difficult to calculate the influences of e-business from a quantitative perspective.* (Founder1, visit1)

*The evaluation of the overall e-business application is difficult and not necessary. (*STE2, visit1)

According to the case companies, the process of assessment is complicated, resource- and time-consuming, and regarded as not necessary because most large enterprises in the manufacturing industry need to apply e-business. And evaluation has little influence on the decision of e-business investment. The main criterion is e-business' impact on the business development.

Another commonality is that they had an evaluation system to each individual IT project. For example, the indicator adopted by Haier is to measure the changes brought about by the IT adoption i.e. the changes of lead time, cash flow cycle, as well as product quality. The indicators adopted by TCL Electrical include user feedbacks and the extent of achieving the aims that were proposed before launching the project, as well as the senior management's comments.

In terms of benchmarking, the interviewees in this sector share the view that many American and European manufacturers are doing better in e-business application than Chinese manufacturers.

The competitive advantages of the case companies

The case companies are industry leaders in their respective segmentation. They all enjoy strong brand names in China. Brand loyalty is cited as a key source of competitive advantage by all the interviewees. To Haier the brand loyalty comes from its high quality products and customer service; to TCL Electrical this comes from high quality products and wide customer recognition.

Another source of competitive advantage cited by the interviewees from TCL Electrical and Founder is sales channel management.

According to the annual reports of these case companies, other key value sources include globalisation (cited by Haier, STE), low-cost (cited by Founder, STE),

innovation (cited by Haier, STE, TCL), R&D capability (cited by STE).

E-business' impact on competitive advantages

Based on figures 8-1, 8-2, 8-3, 8-4 and the analysis of case companies' competitive advantages, we can conclude that these companies share some commonalities in terms of e-business applications and their impacts (See table 8-4, figures 8-7, 8-8, 8-9, 8-10).

E-business applications in these companies have contributed to brand loyalty. The key factors that build brand loyalty include: speed and quality. Two common e-business applications have been implemented to achieve these sources of advantages: e-SCM/e-VCM and e-channel management.

E-business is also a key enabler of highly efficient SCM. The case companies all aim to achieve e-SCM.

Another key source of advantages held by these case companies is low-cost. E-procurement has been adopted to reduce the costs of raw materials. Web-based collaborations have improved operational efficiency which leads to cost reduction.

Meanwhile, these case companies have shared another capability—innovation. These companies have been held as role models in terms of e-business applications. Among them, Haier and STE are held as national role models. E-business has facilitated the implementation of advanced management concepts such as 'made-to-order' and 'internal market chain'.

Table 8-4: E-business' impact on the competitive advantage of case companies

Sources of competitive advantage	Conceptual factors	Related e-business applications by case companies
Brand loyalty	Speed & collaborations	Online information management; e-SCM/e-VCM; e-channel management, B2C.
Operational efficiency	SCM	E-SCM.
Cost reduction	On raw materials & operational management	E-procurement; e-SCM.
Innovation	On technology	E-business applications.
	On products	Collaborative product commerce (CPC).
	On management concepts	Globalisation; 'made-to-order' and 'internal market chain' (Haier); market expansion strategy.

Figure 8-7, 8-8, 8-9, and 8-10 respectively illustrate the case companies' competitive advantage and the relationships with their e-business applications within Haier, TCL-Electrical, Founder, and STE.

Figure 8-7: Haier's competitive advantage and e-business' contribution to it

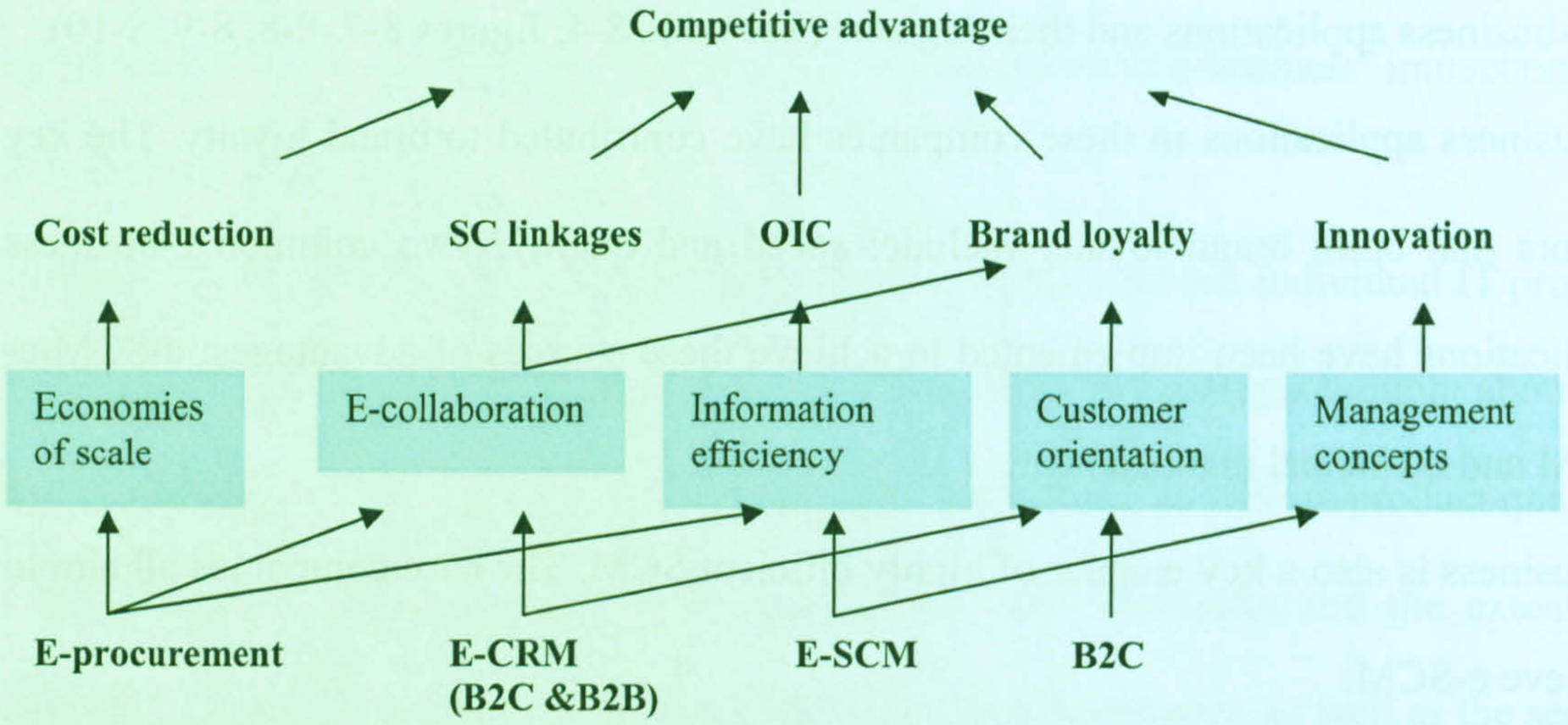


Figure 8-8: TCL-Electrical's competitive advantage and e-business' contribution to it

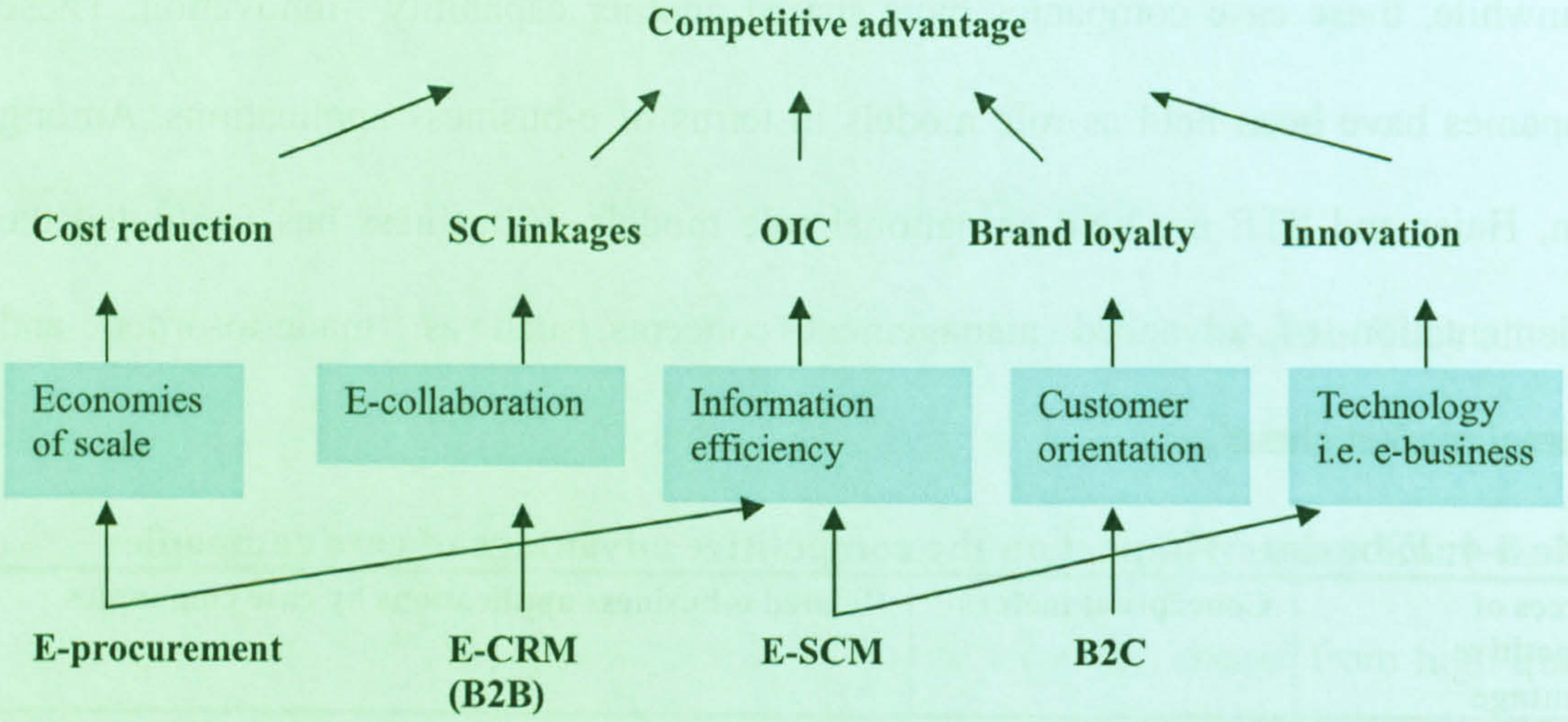


Figure 8-9: Founder's competitive advantage and e-business' contribution to it

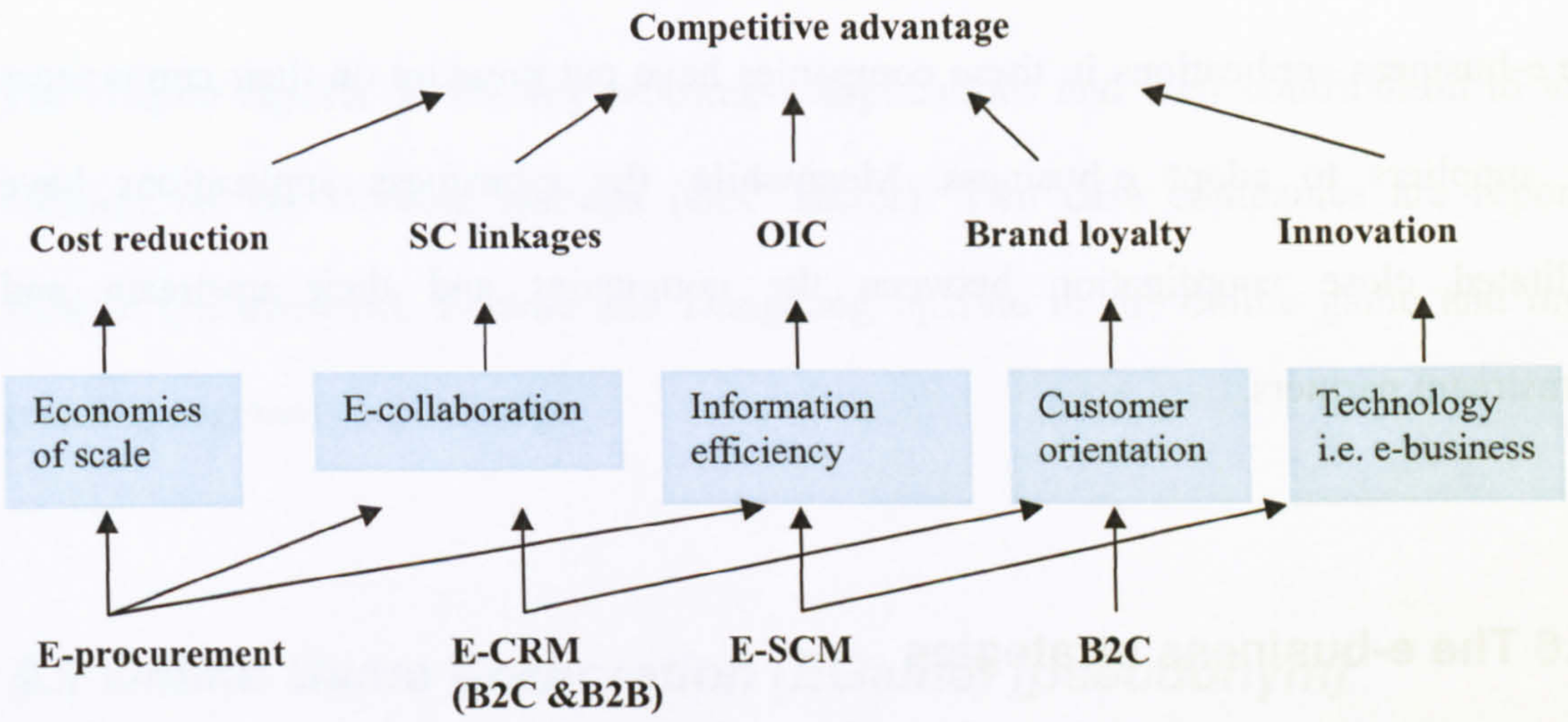
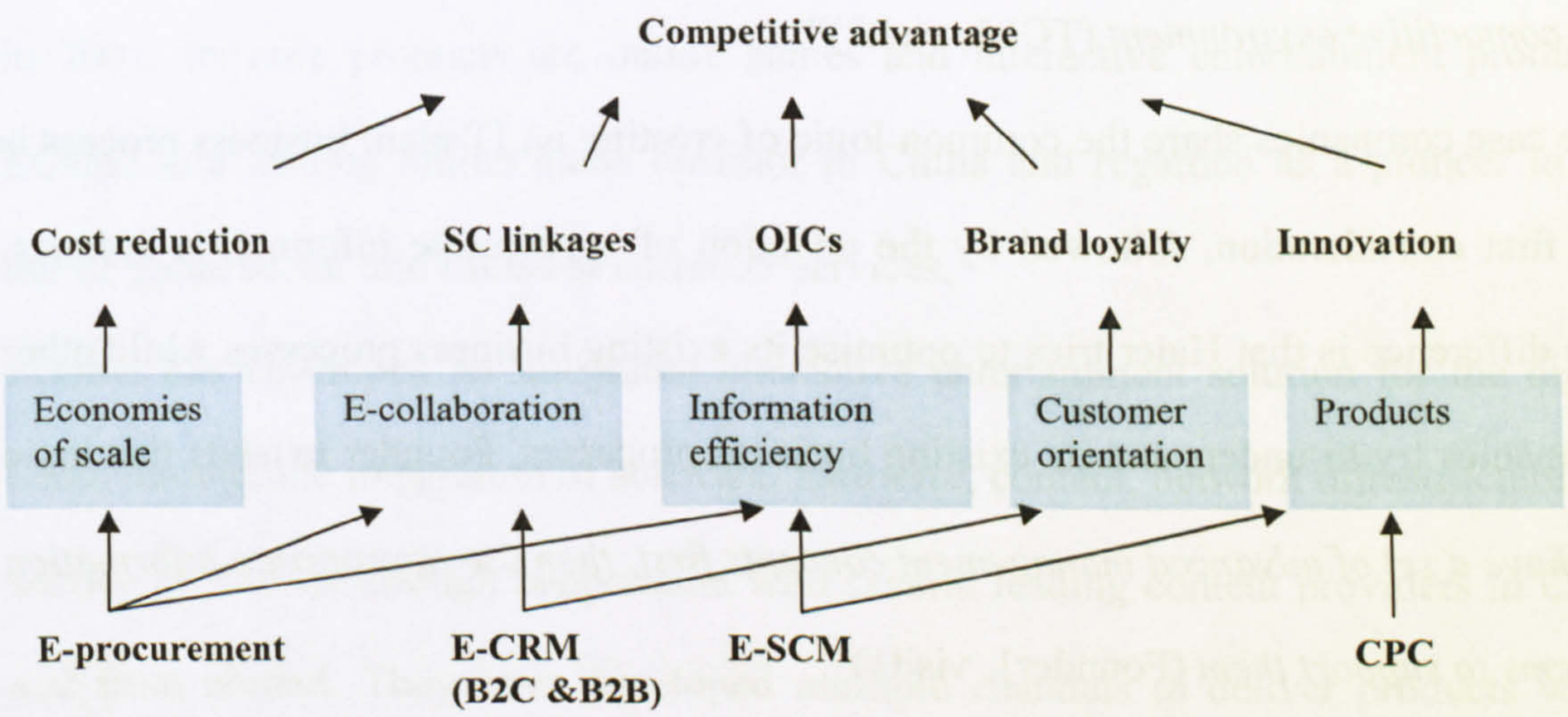


Figure 8-10: STE's competitive advantage and e-business' contribution to it



E-business has contributed to the subtle changes within the organisational structure of TCL Electrical, Founder, and STE. The changes were reflected in the reduction of staff or adding or reducing department(s). For instance, after the e-business adoption STE cut one department while TCL-Electrical set up a new department. E-business has triggered fundamental changes to Haier's organisational structure. A restructuring program on organisational structure was put into operation and this resulted in a flatter organisational structure.

E-business has made no changes to these companies' organisational culture although

communication among employees has become more convenient. Haier's culture of innovation has made a notable contributed to the e-business implementation.

The e-business applications in these companies have put pressure on their competitors and suppliers to adopt e-business. Meanwhile, the e-business applications have facilitated close coordination between the companies and their upstream and downstream partners.

8.5.6 The e-business strategies

'IT plan' is a more appropriate term than 'e-business strategy' for these companies because it is a better depiction of "*the fast changing feature of the IT technologies and the competitive environment* (TCL1, visit2)".

The case companies share the common logic of creating an IT plan: business process is the first consideration, followed by the adoption of appropriate information systems. The difference is that Haier tries to optimise its existing business processes while other companies try to understand its existing business processes. Founder extends this logic as "*have a set of advanced management concepts first, then use appropriate information systems to support them* (Founder1, visit1)".

The case companies share another logic basis for making an IT plan: using IT to support their corporate strategy. For example, within Haier the e-business objective is to create smooth information flow throughout its value system, and consequently, to realise customisation; within TCL Electrical the objective is to provide support for its business expansion strategy, as a result, providing working mobility to its employees on a global scale and integrating its business operation with acquired subsidiaries; within Founder the objective is to improve the efficiency of the value chain management; within STE the objective is to support its global expansion strategy and innovation capability.

CHAPTER 9 CASE REPORT: THE DOTCOM STARTUPS

The chapter reports on the key e-business applications and their contribution to value creation on the Dotcom startups (B2C sector). Two case companies are reported: EGame (pseudonym). EGame and Dangdang operate in the online game and online retailing segment respectively.

9.1 Online Game Corporation (EGame) [pseudonym]

9.1.1 Company background

EGame was established at the end of 1999 and entered the Chinese online game market in 2001. Its core products are online games and interactive entertainment products. EGame is a leading online game operator in China and regarded as a pioneer in the online game sector and excels at customer services.

EGame has developed an integrated interactive entertainment solution for the digital home through the integration of software, hardware, content, network infrastructure and service as well as through cooperation with several leading content providers in China and from abroad. They have developed multiple channels to deliver products which include the Internet, mobile phones, and digital TV.

EGame believes that its advantages derive from its integrated operating platform. 'Centralise platform, decentralise content' is EGame's strategy. Its centralized platform includes a simple and efficient promotion-payment system, digital content delivery (nation-wide distribution platform), 24/7 customer service support, strong technical support teams and an extensive server network. After years of refining, its interactive entertainment platform now attracts a large and loyal user base. EGame aims to develop a one-stop platform that provides a total solution to all content providers as well as a full spectrum of services to end users.

According to its annual report 2009, in recent years, EGame has expanded into more diversified businesses which include game business, literature business and other content business.

EGame1, who is the e-business director of the company, described EGame as an 'e-business company' because its businesses are built on electronic channels or networks. He provided an e-business definition within the context of EGame:

> *E-business refers to all the services provided and all the information system platforms adopted by the company.* (EGame1, visit2)

Facing the increasing competition in the market, EGame is now exploring new ways of generating revenue. For instance, they are generating revenues from aging games through the implementation of the free-for-play revenue model, thus allowing gamers to play for free and then to sell virtual items within the game. Meanwhile, EGame is seeking the market segment of the Web infrastructure intermediaries, who provide a platform by which software companies and other physical merchants can efficiently sell or distribute their goods. Moreover, EGame is diversifying into new products e.g. literature and video content.

Besides generating new revenues, EGame has cut its operating costs. By imposing strict budgeting controls on departments and rationalizing staff, EGame is able to reduce operating expenses.

9.1.2 Main e-business applications

The basic e-business applications of EGame include billing systems and e-business systems. The most prominent application is the payment solution for its products. EGame1 stated:

> *Like telecom companies, the billing system is the most important application adopted by EGame.* (EGame1, visit2)

Since 2005, EGame has focused on building up its information infrastructure systems. With this foundation established, the company can then adopt new applications, such as a single point register or the user portal. Up until June 2005, EGame's main e-business applications included:

1) Payment solution. Since 2004, the continual promotion of e-payment methods, referring mainly to online bank card payment.
2) Disintermediation. Since 2005, the active exploration of B2C applications, including the seeking of high profit margins by reducing the intermediary channels.
3) Building e-business infrastructure. Through the improvement of e-business applications, better information management has been achieved on business flows, organisational management and sales management. Before building e-business infrastructure, EGame used the same systems to manage these operations but these systems were independent from each other.

In 2005, EGame carried out two key projects to provide better services to their end users. One was the provision of the VIP users' platform, which integrated all of the users' resources so that those users could have the convenience of a single account to register for all the services provided. Meanwhile, the company intended to provide an integrated customer service so that users only needed to dial one number to solve all their problems. The other project was to formulate a unified payment collection system and to provide a unified web security service.

These two projects have worked in the same direction of achieving disintermediation because they substitute services (i.e. the collection of payments and the provision of customer services) provided by the intermediary channels.

Details on the three main e-business applications are as follows:

The billing system

The billing system is the most important e-business application in EGame. EGame's e-

business department is responsible for providing payment solutions to all the services provided by the company. EGame1 described it as follows:

> *In 2005, the e-business department was renamed as the billing system centre because the focus of the e-business applications has changed from e-business systems, which concentrates on marketing promotion or collaborations, to billing systems. This is because more products containing billing calculations and a stricter user account management method applied compared with previous years.* (EGame1, visit2)

EGame has adopted two main types of payment method: the traditional payment method and the online payment method. The former refers to selling pre-paid cash cards to customers. For this method, the company has to build distribution channels, which include Internet cafes, web brokers, and retail points of sale. The payment methods adopted in 2004 included the following:

1) Traditional payment methods.

- Sale of pre-paid cash cards via the distribution channels; the distributors include regional distributors and sub-distributors, including Internet cafes, web brokers, and retail points of sale, thus helping the company to transfer capital and to provide services to the end users.
- Telecom companies collecting payments for EGame. These companies bundle broadband access services with online games.

2) Online payment methods.

- Connection with banks' e-banking systems; for example the use of e-sales systems to connect e-sales distributors, who sell virtual pre-paid cards.
- Direct online sales using credit card payment.
- Collection of payment through mobile companies using mobile messages.

In 2005, the company readjusted its payment methods:

1) Sales of pre-paid cash cards remained. However, EGame tried to reduce the

intermediary channels by exploring B2C applications.

2) Online bank card payment became the most important development area in 2005.

EGame1 described the situation with regard to the application of online payment by EGame and the impact of B2C e-business readiness to EGame's e-business operations:

> *In 2005, the credit card payment accounted for 10% of the total payment while in 2004 the proportion was around 6-7%. The company has cooperated with banks to promote allied bank cards. Alternatively, the company and the banks will give discount to each other's customers. Since 2004, most of the big Chinese banks have been centralising their systems and data. After this integration, e-banking, a credit card system, and a credit system will be established. As a result, EGame will face better business environment than before.* (EGame1, visit2)

Apparently, between 2004 and 2005, EGame realised their aim of reducing and simplifying its payment methods by reducing the proportion of payment collection through intermediary channels. This was achieved by integrating its resources and then providing a user portal as EGame1 stated:

> *Integration is currently the most popular activity in the IT world. Since 2004, EGame has been keeping on integrating its resources. As a result, the company has built up a unified payment platform, which integrates its pre-paid card sales channel, credit card sales channel, channel resources, and telecom resources into a united payment website. From a technology perspective, it provides a united connection. When users are connected to this system, they can choose their preferred payment method from this website.* (EGame1, visit2)

Based on this payment infrastructure, EGame could create new value by collaborating with small merchants, who want to sell products online but lack the capability of developing their own online channels. EGame could provide these companies with a payment platform, online sales channels, and a user base. Up until June 2005, over ten merchants used EGame's platform.

B2C-CRM

Interaction between people facilitated by the Internet is the key business concept of EGame. The quality of the games provided and the online game-playing-experience are two core components of customer value. EGame uses multi-channels to deliver customer services. These include online customer services and offline customer services. Customers are able to obtain services through a unified user portal, physical service centres, and call centres.

CRM is a key e-business application aiming to improve customer services. Currently, this application focuses on VIP customers. EGame is planning to further explore the concept of CRM. The interviewee stated:

> *Since the end of 2004, EGame has started the project of building the VIP user platform, which is a CRM system. In the future, this application will be extended to all customers. The VIP user platform aims at integrating all of the users' resources so that users can use one account to register to all the services. Moreover, it will provide integrated customer service so that users only need to dial one number to solve all their problems.* (EGame1, visit2)

The company regards the CRM concept as 'reusing the users' resources'. The CRM system is integrated with the billing system and front-end services. As a result, customers should be able to use one account to register with regard to all the customer services. These services include a virtual community, e-commerce for in-game virtual items, wireless content, and a game theme centred online forum and literature. The services also include a united payment collection system as well as a united web security service. Moreover, EGame would like to develop products and carry out marketing activities based on users' behaviours. EGame1 explained EGame's plan of the CRM system:

> *EGame will explore further the concept of CRM, which refers to reusing the users' resources. CRM will be integrated with front-end services. For example,*

EGame will provide fast-channel service to its VIP customers. Currently, these services are mainly for the purpose of promoting existing services to VIP. In the near future, when the whole user system has been established and integrated, EGame can provide unified service to its users. Moreover, EGame can develop products and carry out marketing activities according to its users' behaviours. I believe that this is the real aim of ERP and CRM. EGame started this project after the end of 2004. (EGame1, visit2)

ERP

EGame1 explained the ERP application within EGame:

In 2004, EGame was planning to use ERP to redefine its internal value chain while utilizing e-business systems to manage customers. Since 2004, EGame has carried out an ERP project which has included research and development, operation, and managing end users' information. (EGame1, visit1)

The financial system and e-business systems are connected.

9.1.3 The challenges of e-business applications

As the focus of the overall corporate strategy and e-business applications changes, so do the main obstacles to e-business applications. In 2004, the company's operations focused on marketing promotion and collaborations. The main obstruction was the penetration of the Internet to individual consumers on a large scale. This challenge belongs to the category of 'the e-readiness' of customers.

In 2004, the company faced some key challenges related to EGame's distribution methods. These include the knowledge of managing end-user systems and effective and interactive communication with end users.

In 2005, EGame's e-business applications focused on the billing system and sustainable

development. Here, sustainable development refers to developing information system infrastructure for the company's future development, which includes integrating independent systems. The conflict between business operations and integration requirements becomes the main obstruction.

> *As a public listed company, the biggest challenge for EGame in implementing its operational platform is to find a balance between sales turnover growth and sustainable development. For example, if EGame needs to build a new integrated information platform, they may need to slow down their business operations so that they can integrate some resources and build technical foundations. For instance, to develop a new game, the technical team may face a dilemma of choosing the new system-in-building or previous systems because the former may take one or two extra years. If based on the integrated system, EGame has to slow down the speed of the product to the market. Alternatively, to guarantee the product goes to markets quickly, EGame has to develop another independent system to operate the product.* (EGame1, visit2)

To handle this trade-off, their strategy is to channel half of the human resources into maintaining existing systems, with the rest focusing on technology innovation. However, as the company cuts operation costs and rationalizes staff, this could prove difficult.

Besides the challenge to build IT infrastructure, another challenge—to sustainable development—arises: to update its organisational culture and governance system in order to cope with the high speed growth rate of the company. EGame1 gave some examples:

> *EGame's organisational culture faces challenges because of the high speed growth of the organisation. Some employees cannot see their contribution to the corporate strategy. As a result, they would lose the motivation of working. Meanwhile, some new employees appear unsatisfied with the welfare and salary systems. As a result, these employees lose both the passion for, and the*

understanding of the aims of operation. (EGame1, visit2)

9.1.4 E-business applications' impact

E-business' impact on competitive advantages

EGame1 concluded with the views of the senior managers in terms of the company's core competitive advantages:

> *Currently, our senior managers haven't achieved an agreement on what our competitive advantage is. Some mentioned the user-base; some mentioned operations, resources, first mover advantages, or management teams. However, no one can convince the others. Therefore, I think, EGame may have the advantage of comprehensive capability but this advantage is not sustainable because it may not last over three or five years.* (EGame1, visit2)

However, EGame1 believes that in the future its integrated operating platform will be a source of competitive advantage:

> *In the future, when the integration of the platforms has been accomplished, EGame will have competitive advantages in its operation platform. With this platform, the company will not need to spend heavily on advertising new products and building up new sales and service channels. As a result, EGame can operate new games with reduced time-to-market at low cost because they can re-use the integrated platform.*
>
> *Presently, a game operating company needs to invest over 10million RMB in advertising a new game. At the same time, it needs to spending time on building new distribution channels. But with the integrated platform, EGame does not need to do these activities because its customers can play the new games when they enter their user portal using their previous ID. Therefore, EGame only need to test its new games at the existing user platform for around 15 days. Then the*

games can be operated formally.

EGame1 believes that to build this integrated user platform companies need to spend years of time. And this capability cannot be easily copied by the competitors. Since 2005, EGame has been building up this competitive advantage in the industry. (EGame1, visit2)

In recent years, EGame began to reap the rewards. The one-stop user portal has operated successfully. Moreover, many small and medium online game providers have operated their games on EGame's platform. And in 2010 a leading online game provider, one of its major competitors, has signed contract to use its user portal to operate a game title.

EGame is doing better in corporate governance and cultivating organisational culture than its competitors in the industry. At the same time, the company is eager to learn and gain experience from its competitors in terms of their methods of integrating user resources. These competitors have adopted different approaches. They began by first establishing and integrating their user base, then exploring business models to generate revenues.

EGame expects that the competition in the Chinese online game industry will be more intense than previous years because the product structure of their competitors is more similar now. Government regulations within this industry have played a key role in implementing this change. For example, the biggest risk is a change in government policies, as public opinion is opposed to young students playing online games. To lower this risk, EGame is changing its user base as well as product structure. After this alteration, the proportion of traditional casual games, featuring a broad range of users and low profit margin, could be higher than before. As a result, EGame's products will be similar to the products provided by the Internet portals and other competitors, who begun with building broad user bases.

EGame1 expressed his view on the relationship between e-business applications and competitive advantage:

Overall, in terms of e-business' impact on strategic advantage, e-business is only a tool rather than a strategic weapon. (EGame1, visit1)

In 2005, he further explained this view:

> *Information systems may only bring relative advantages in a short time. To create sustainable advantages, more efforts are needed. For example, we can use e-business to gain competitive advantage by building up an integrated user portal which is an open platform that can easily be used by other companies.* (EGame1, visit2)

E-business' impact on organisational structure, culture

Fundamentally, EGame's organisational structure is built on the e-business networks:

> *Since EGame is built on the networks, the e-business applications have not changed our organisational structure.* (EGame1, visit1)

In 2005 EGame re-adjusted its organisational structure following the industrial trend of 'integration'. Basically, the company's organisational structure is divided into five centres: billing, authentication, security, sales, and customer service. Every centre specializes in establishing a platform which will then be integrated into a unified platform. Together, these five centres support a user centre platform and business operation departments, including some small teams organised according to product projects; for instance, these projects could deal with activities such as operating new games, collaborating with small merchants, or providing technical support to these merchants. These small teams would be quite flexible. Also, there may be some specific project teams whose members are from the five basic centres.

In terms of EGame's organisational culture, it is relatively stable because it develops slowly and step by step. Yet each year, the corporation deals with one theme; for example, in 2005, the theme was "stability and interaction". Stability refers to integration and optimisation of human resource. Interaction is concerned with making

greater profits based on integration.

9.1.5 EGame's e-business strategy

EGame's e-business strategy in 2004 was to improve efficiency and achieve the smooth running of Internet-based information flow. The aim of the e-business department was to unify all the payment methods so that it could provide a unified payment solution to all of EGame's businesses.

In 2005, much progress was made to realise plans made in 2004. Between 2005 and 2006, the main aim was to integrate resources so that EGame could have a better foundation for long term development. According to EGame1:

> *IT enterprises need to accumulate their resources step by step as traditional enterprises have done.* (EGame1, visit1)

The process of EGame's integration was concerned with two main areas:

Firstly, it included the integration of technologies and then the provision of an integrated entertainment portal. This portal provided users with web-services, game services, support services, as well as customer services. At the same time, EGame was able to reuse its user resources.

The second area included analysis of the collected data and the use of this information to provide support in product development and decision making.

Overall, these two main applications were put in place to realise the potential of the e-business and CRM concepts.

9.2 Dangdang.com (Dangdang)

9.2.1 Company background

Founded in 1999, Dangdang.com is a B2C company that specializes in books and media-related products. Its goal is to offer its customers the widest range of products possible. Since 2005, Dangdang has classified itself as an online retailer. Dangdang's major rival is Amazon's Chinese branch, Joyo Amazon.

In recent years, Dangdang had shifted its focus to general merchandise, which has a higher gross margin than books. General merchandise accounted for 20% of Dangdang's total sales value in 2009. And the figure is expected to reach 50% in 2010. Moreover, since 2009, Dangdang has begun inviting cooperative vendors, providing them with virtual storage and logistics services. Thus, Dangdang's businesses cover both B2C and C2C. (NBD, 2010)

According to Li Guoqing, Co-President of Dangdang, Dangdang's strategy in the next few years should increase market shares and offer better customer services. Their business model is (CommunicationIndustryWeekly, 2004):

1) To focus on online sales and B2C strategy.
2) To offer a wide range of books for the aim of building a wide customer base.
3) To introduce virtual inventory strategy in an effort to create a favourable delivery system. In 2003, only 15% of titles were stored and distributed by its warehouse in Beijing, compared to 30% in 2004. The rest were distributed by local partners, most of which are Xinhua bookstores.

Dangdang's business model comprised the cutting down of operation costs as compared to its traditional competitors.

According to its CEO Li Guoqing, Dangdang determines to strengthen its customer base and put more efforts into marketing, logistics, procurement, and technology. The company has planned to set up more warehouses in big cities in order to improve its

door-to-door delivery system (CommunicationIndustryWeekly, 2004).

Meanwhile, Dangdang resolves to establish a better supply chain system to improve upon their existing system which they feel harms their image due to their local partners' outdated database systems. In addition, Dangdang plans to build a customer-friendly sales interface, which should be easier for customers to operate. Eventually, the company hopes to invest in business intelligence, in order to offer diversified services rather than take a one-size-fits-all approach (CommunicationIndustryWeekly, 2004).

9.2.2 Main e-business applications

Where Dangdang is concerned, e-business technologies have been applied along the whole business process, including procurement, sales, and internal management administration. The following, are the key issues emerging from the interview.

E-marketing

Dangdang uses the Internet and mobile phones as its main marketing channels. Through these channels, it is possible for Dangdang to adopt a one-to-one marketing approach and to provide personalised suggestions to its customers. These marketing activities include the sending of personalized recommendations or promotional information to existing customers via emails or mobile small messages. Dangdang1 described how Dangdang using the Internet and the Web as its main marketing channel and the impact of the usage:

Firstly and foremost we use Web as a sales channel. If a customer bought our products, we would send them personalized messages on recommendations and promotions periodically. These messages are sent either via emails or mobile messages.

To attract new customers, Dangdang has invested heavily in web advertisements.

To improve the page view of its websites, Dangdang advertises at famous Chinese portals such as Sina.com.cn, Sohu.com, and Netease.com. Meanwhile, it collaborates with web-based companies, who have similar customer segmentation as Dangdang. Together, Dangdang and these companies are able to provide joint advertisements or promotion with regard to each other's target customers.

Using Web as main marketing channel is a very efficient approach. (Dangdang1, visit1)

However, Dangdang needs to improve its website interface design to make it more user-friendly. Dangdang1 expresses the reasons why he feels the website interface design has not been greatly improved.

Dangdang has expanded at enormous speed. Between 2004 and 2005, the company's size had doubled. Consequently, it lacks a special department to deal with some technical details such as the continuous improvement of the website interface. (Dangdang1, visit1)

B2B: procurement & channel management

Besides marketing activities, Dangdang also uses Internet-based networks for procurement, inventory and sales control, and financial management between itself and its suppliers.

For example, Dangdang has developed some information systems for its suppliers so that the networks could be connected between Dangdang and its suppliers. As a result, suppliers will then know the number of products which they have sold. Consequently, stocks can be replenished in a timely manner. Dangdang also uses these systems to settle accounts with its suppliers. From the systems, suppliers will know the value of their products sold and Dangdang are then able to settle accounts at regular intervals. (Dangdang1, visit1)

ERP

Dangdang1 explained the ERP adoption and information management within Dangdang:

> *Dangdang is in the process of adopting an ERP system. It has an integrated information centre which enables all the information to be updated in real time. Within the company, some employees are chiefly responsible for obtaining updated data and information.* (Dangdang1, visit1)

B2C delivery service

Up until 2005, Dangdang provided delivery service in sixty six cities in China. Customers pay cash on delivery after they have inspected the products which they purchased.

In several large cities in China, the company has warehouses which are gradually expanding in size and capability. Warehouses are used for storing core products, and are important for the guarantee of on-time delivery. Up until 2010, Dangdang has had six logistics centres in China. These centres will play a core role in Dangdang's nationwide sales network.

Dangdang orders low purchase volume products from its partners' bookshops. According to Economist (2003), Dangdang has established a partnership relationship with the leading Chinese bricks-and-mortar book corporation, Xinhua, who distributed 85% of Dangdang's sales tiles up until 2003. This strategic alliance enabled Dangdang to make significant savings on warehouse investment. For example, up until August 2003, Dangdang only owned one warehouse in Beijing, which distributed 15% of its titles.

To deliver products to the customers on time, Dangdang has established partnership relationships with couriers who deliver products to customers as well as the collection of payment. Payments are generally paid by cash-on-delivery. China had no pre-existing mail-order industry before e-business, so customers were not accustomed to paying for

delivery (Economist, 2003). Courier companies settle accounts with Dangdang at regular intervals.

Einhorn (2004) states that Dangdang hires courier companies who in turn hire 'bicycle boys'—mostly migrant workers from the countryside—to distribute orders. Fifteen to twenty orders are delivered in a day. If the order is cash-on-delivery, the cash is collected and returned to the courier company, where it is then transferred to Dangdang. Dangdang pays its courier companies a 5% shipping charge, which is charged to the customer. In order to get business from Dangdang, the courier companies are required to make safety deposits equal to three days worth of revenue. This can range from US$6,000 to US$12,000. The workers are obliged to pay a deposit with the courier companies to secure their jobs.

In recent years, online payment has steadily become accepted by Chinese customers. Consequently, Dangdang has partnered with Alipay, China's leading online payment service provider, to provide online payment services for its customers (ChinaBusinessNewswire, 2010).

9.2.3 The challenges of e-business applications

As an e-business pioneer, Dangdang has to explore the opportunities and methods of e-business applications, and educate end consumers to accept online shopping.

According to Yu Yu, Dangdang's Co-Founder and Co-President, distribution and payment remain huge challenges (Economist, 2003). Online payment is not readily accepted by customers. For example Einhorn (2004) gives details of the challenges of B2C distribution and online payment:

1) Underdevelopment of the credit card market;

2) Concerns with online payment security;

3) Uneven development of bank services cross provinces. For example, bank servers in

different provinces and cities run on different schedules.

4) The unreliability of China's postal service, and a lack of trustworthy nationwide alternative like FedEx. Yu Yu believes the cash-on-delivery system and its delivery system work well in China, and consequently there is no need to pay 3% to 4% finance charges to banks for credit card payments.

9.2.4 E-business applications' impacts

E-business' impact on competitive advantages

Dangdang1 described Dangdang's competitive advantages as follows:

> *Dangdang's core competitive advantages derive from high quality products, low price, and a broad range of product option. Compared with traditional shops, Dangdang can save 9.5% of costs because it doesn't need to rent physical shops in the city centres. Overall, Dangdang's main competitive advantages derive from e-business. Consequently, its main competitors are e-retailers.* (Dangdang1, visit1)

Compared with traditional competitors, Dangdang offers a broader range of products. A large volume of procurement, good partnership relationships with suppliers and low operating costs support the company's low-price strategy.

Besides the advantages gained from the company's e-business model, Dangdang1 believes that there are advantages with Dangdang's leadership and company governance system. As the management group is the controlling shareholder, they have the power to make their own decisions. This governance differs from that of their main competitor, Joyo Amazon.

> *The senior managers in Joyo Amazon have to report to their American parent company on every important management decision. In contrast, our senior executives can make their own decisions. Meanwhile, the management's*

motivations are stimulated by employees' share options. (Dangdang1, visit1)

Compared with traditional book shops, Dangdang's e-business model provides lock-in effect on customers. Dangdang1 gave examples of this:

For example, Dangdang strives to improve the efficiency of information searches by providing effective search engines and also by the careful categorizing of products. The company cultivates and leads customer needs through personal recommendations, product promotions, and recommendations on best-selling products. (Dangdang1, visit1)

E-business' impact on organisational structure, culture, and the industry

Dangdang's culture is different from that of traditional companies. For example, they allow their employees relatively flexible working time. The employees often communicate with each other via MSN massager or emails which are encouraged by corporate culture.

Meanwhile, this culture prompts employees to learn from western e-business pioneers' best practices such as Amazon.com's business models, Wal-Mart's attention to costs, and UPS' sophisticated logistics (Economist, 2003).

In terms of its e-business strategy's impact on the industry, Dangdang1 believes that e-business applications will improve the industry structure.

The services provided by online retailers will contribute to improving sales of traditional bookshops given the low transforming rate of web page views to real orders and the limited coverage of e-retailers' delivery networks. (Dangdang1, visit1)

9.2.5 Dangdang's e-business strategy

Dangdang's overall strategy appears to be low cost leadership facilitated by the provision of the broadest range of products. In addition, it creates high added-value products based on brand merchandise and quality services.

9.3 Comparison of the case companies

9.3.1 The understanding of e-business concept

Management information system

Viewed from a Chinese industrial context, managers prefer to using the terminology 'enterprise informating management' rather than using 'e-business management', as demonstrated by EGame1:

> *There is no clear cut between the concepts of 'enterprise informating platform' and 'e-business'. E-business is just a concept which is reflected by the applications of information system platforms e.g. ERP or CRM. My understanding on the concept of 'e-business' is: "if an enterprise uses the Internet or electronic methods to manage their commerce, this behaviour can be called e-business. Of course, here 'commerce' not only refers to as e-transactions but also includes providing services and marketing."* (EGame1, visit2)

Overall, both EGame and Dangdang are e-business companies as their businesses are built on electronic channels or networks. As EGame1 expressed:

> *E-business refers to all the services provided and all the information system platforms adopted by the company.* (EGame1, visit2)

EGame1 believes that e-business is only a tool rather than a source of competitive advantage. This could be because he recognises that to reap the benefits of e-business, technology implementation in itself is not enough.

Dangdang, on the other hand, using e-business as its main marketing and sales channel, believes that e-business is a source of competitive advantage. E-business applications facilitate its low cost strategy through low cost operation management and high quality information management.

Table 9-1 illustrates the aforementioned understanding of the e-business concept with

regard to the case companies.

Table 9-1: The understanding of e-business concept

	EGame	Dangdang
Key concepts	An e-business company.	An online retailer.
Key assumptions	1) There is no clear cut between e-business and enterprise information system management; 2) E-business is only a tool rather than a source of competitive advantage.	E-business is a source of competitive advantage.
Key features	1) Use the Internet or electronic methods to manage commerce activities; 2) E-business refers to "all the services provided and all the information system platforms adopted."	E-business is used as a main marketing and sales channel.

9.3.2 The reasons for e-business adoption

Both EGame and Dangdang were e-business pioneers in China. Both use e-business as a tool to discover new business opportunities by creating new industry segments. For example, new buyer segment (EGame) or new sales channel (Dangdang). Dangdang's main business concept in China is to adopt B2C and adapt Amazon.com's business model for the Chinese business environment. Similarly, EGame's business operations are built on the Internet and networks. Meanwhile, EGame is in the process of building an integrated user platform, which will be a source of competitive advantage (See Table 9-2).

Table 9-2: The reasons for e-business adoption

	EGame	Dangdang
Key categories	1) To operate business operations; 2) Its integrated operating platform will be a source of competitive advantage.	1) To apply B2C in Chinese markets. 2) To become an online retailer.
Key aims	To integrate its operation platforms.	To adapt Amazon.com's business model for Chinese markets.

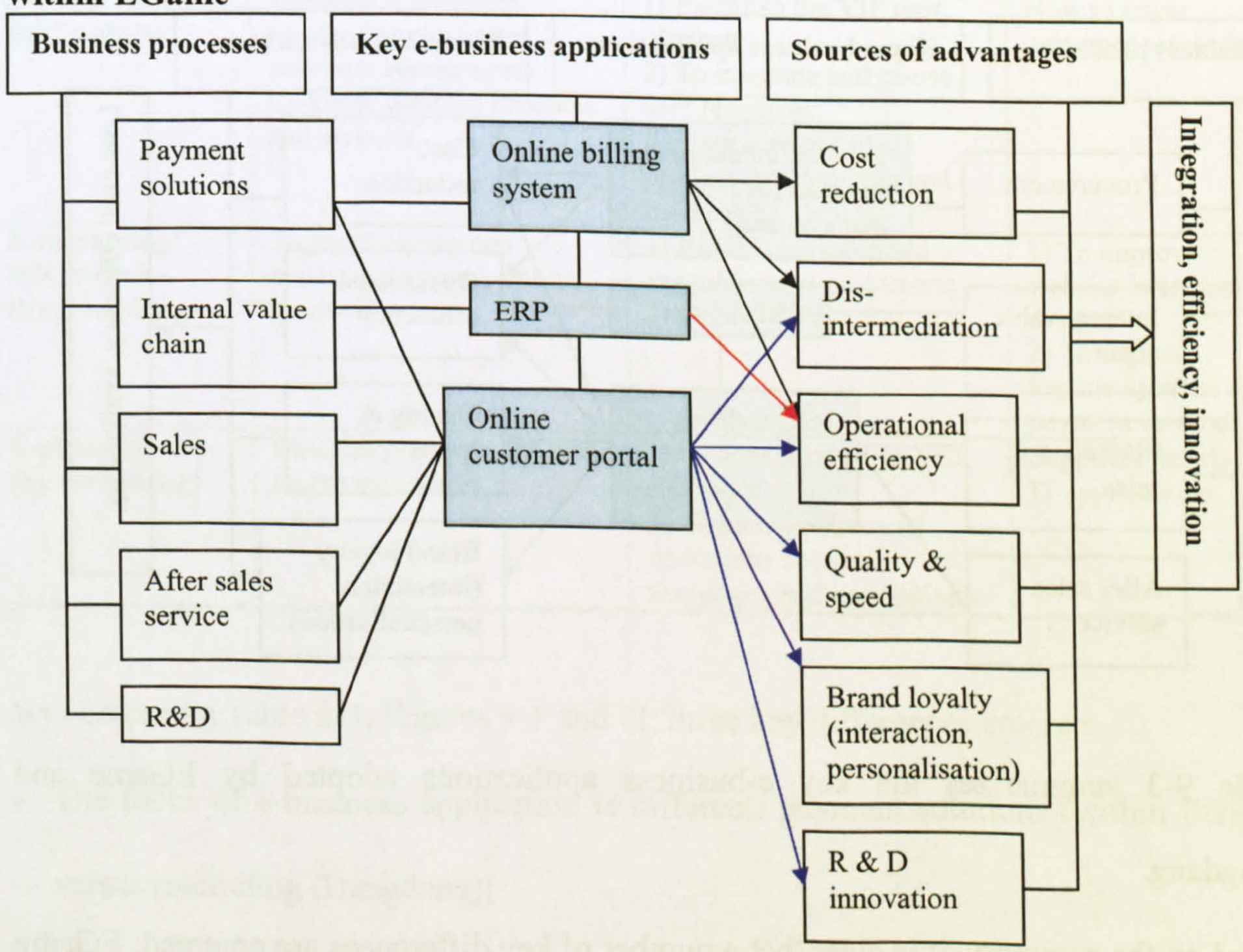
9.3.3 Key e-business applications

EGame's advantage derives from its integrated operating platform and continuous e-business innovations. To gain these advantages, EGame has put efforts to build up

online information capability, and thus, to achieve integration, interaction, personalisation, disintermediation, and cost reduction (see Figure 9-1):

- Integration, personalisation, cost reduction, and disintermediation—achieved through its VIP user platform (from 2005 it started to develop an online user portal), a united payment platform, and integrated operation platforms i.e. ERP. Through the combination of these applications, EGame has achieved both significant cost savings and high efficiency in operating games. Moreover, EGame has beginning to create new revenues from its integrated platform by distributing games for other major players or SMEs.
- Interaction—achieved through its online user portal. Through timely interactive customer service, customer loyalty has been improved greatly. Additionally, based on the analysis of customers' behaviour, EGame can develop customer-oriented products and carry out customer-oriented marketing activities.

Figure 9-1: Key e-business applications and their related sources of advantages within EGame



Because Dangdang sells physical products online, its key concern is to solve delivery

issues and gain marketing shares through marketing activities. As an e-retailer, the key sources of competitive advantages derive from the capability to effectively run the whole industry value chain, including the effective management of suppliers, delivery companies, and customers. Consequently, B2B and B2C applications are equally important to Dangdang. Meanwhile, strategic alliance with suppliers and delivery companies is a key strategy adopted by Dangdang.

Compared with traditional competitors, Dangdang has applied e-business to achieve low-cost advantage, value chain management efficiency, and personalisation. Its main e-business applications include e-marketing, e-procurement, and B2C website (see Figure 9-2). Its B2C website provides a broad range of products at low cost. Meanwhile, Dangdang strives to deliver customer orders in a timely manner and provide high quality customer services.

Figure 9-2: Key e-business applications and their related sources of advantages within Dangdang

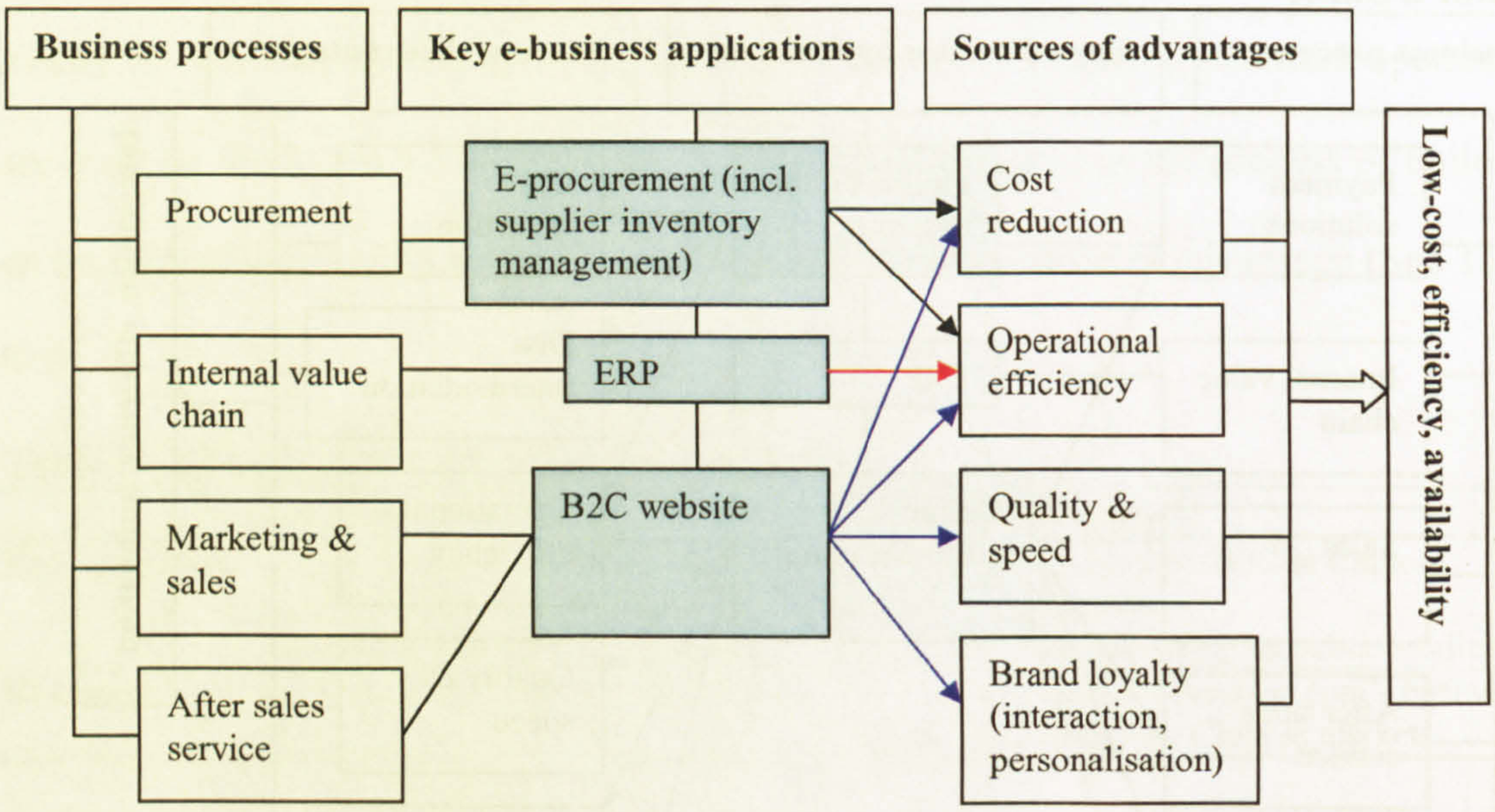


Table 9-3 summarizes the key e-business applications adopted by EGame and Dangdang.

Based on the summary, it is clear that a number of key differences are emerged. EGame and Dangdang provide different categories of products, i.e. digital products versus

physical products. They have different corporate value chains, which in turn reflect different emphases on the categories of activities. EGame provides online games, which are either developed in-house or by a small number of famous game developers. Therefore, its procurement process is simpler than that of Dangdang. EGame's e-business technologies are used primarily to manage B2C activities and reduce operating costs thus providing high quality services. EGame does not need to focus on physical logistics because it only sells digital products, and as a direct result, its e-business applications focus on online payment solutions, CRM, and research and development.

Table 9-3: Key e-business applications in the companies

	Aims & Objectives	Key applications	Key concerns
E-business system (by EGame)	1) To build an information system infrastructure; 2) To achieve smooth information flow.	1) Use information systems to manage business flow, administration and sales. 2) Apply B2C to reduce intermediary channel.	The tradeoffs between growth and sustainability.
Billing system (by EGame)	1) To have a unified payment website for all the services; 2) To achieve disintermediation.	Two payment solutions: online payment methods & collecting payment by intermediary channels.	E-business readiness.
E-CRM (B2C)/ B2C website	To increase customer loyalty through better customer services and customer oriented products and services.	1) Establish the VIP user platform; 2) To integrate and re-use user resources; 3) Customer oriented product development and marketing.	How to reuse customer resources.
E-marketing/ B2C website (by Dangdang)	To adopt one-to-one marketing through online channel.	1) Provide personalised suggestions to customers; 2) Online advertising.	1) To improve website interface design; 2) To improve logistic systems and payment methods.
E-procurement (by Dangdang)	Used for procurement, and inventory control.	1) System connection with suppliers; 2) To manage financial operations between Dangdang and its suppliers.	Suppliers' levels of IT applications.

By comparing Table 8-3, Figures 9-1 and -2, three key differences emerge:

- The focus of e-business application is different: payment solutions (within EGame) versus marketing (Dangdang);
- Different sources of advantages exist: R&D innovation and disintermediation (within EGame) versus web-based collaboration (Dangdang).

Despite their differences, these two case companies share some similarities in e-business applications. Firstly, as figure 9-1 and 9-2 show, both companies are built on internet-based corporate infrastructure which then contributes to online information capability. For example, both companies have automated and optimised most of their business activities along the value chains. Secondly, e-CRM (i.e. user portal and B2C website) is a key application adopted by the companies in order to achieve some common sources of advantages, namely cost reduction, integration, efficiency, brand loyalty or personalisation.

9.3.4 The challenges of e-business adoption

E-readiness is the challenge common to both companies. Of the components they cite is the 'e-readiness' of the supporting industries which refers to the development of trustworthy transportation and payment infrastructure and the market forces e-readiness, i.e. customers' and suppliers' acceptance of e-business.

Coping with the rapid speed of organisational growth is a further challenge shared by the two companies. They appear to require a continuous adaptation of organisational structure, organisational culture as well as technology innovation in order to be able to deal with it.

Other challenges originate from their e-business implementation. EGame is exploring how to manage its end users and as a result, re-use its customer resources. As a public listed company, EGame must face the potential trade-off between delivering high speed growth and keeping healthy sustainable development.

Table 9-4 illustrates these challenges.

Table 9-4: The challenges of e-business applications

Applications	Challenges or obstructions
Tradeoffs between growth and sustainability (EGame)	To find a balance between high speed growth and sustainable development. There is conflict between the speed of product to market and resource integration requirements.
CRM system (EGame)	How to manage end users?
B2C readiness (Dangdang and EGame)	1) Educating consumers to accept online shopping; 2) Distribution and payment methods; 3) The outdated information system adopted by the suppliers. (Dangdang)
Cope with high speed growth (Dangdang and EGame)	1) The challenge of updating organisational structure and organisational culture; 2) The requirement of continuous technology innovation.

9.3.5 The impacts of e-business applications

The competitive advantages of the case companies

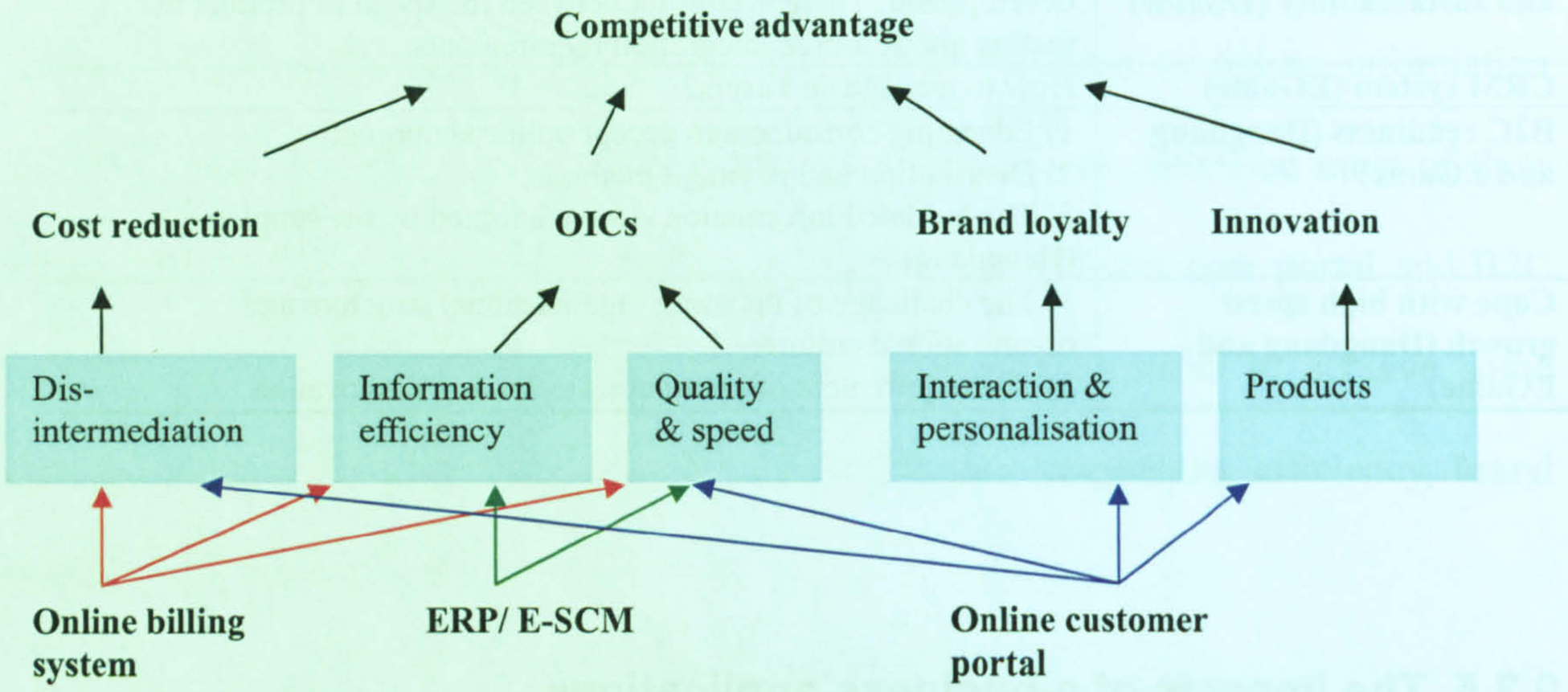
Both EGame and Dangdang are industry leaders in their respective segmentation. They have some common advantages in the following areas:

- Corporate governance system and corporate culture which facilitates flexibility in business operation and their learning capability;
- The capability of managing customer relationship i.e. through interaction and personalisation;
- Operational efficiency.

E-business' impact on competitive advantage

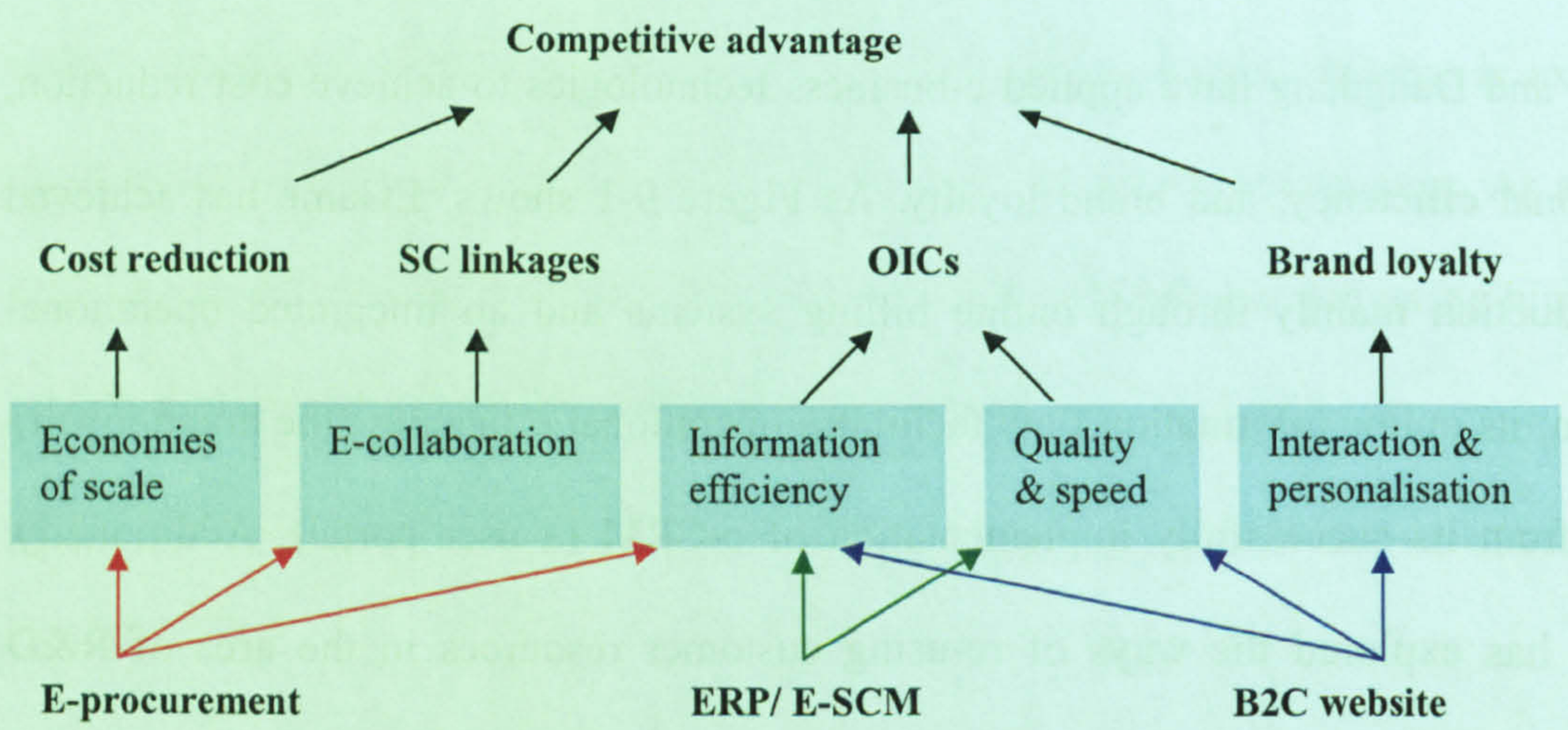
EGame and Dangdang have applied e-business technologies to achieve cost reduction, operational efficiency, and brand loyalty. As Figure 9-1 shows, EGame has achieved cost reduction mainly through online billing systems and an integrated operational platform; its online information flow facilitates operational efficiency; the brand loyalty comes from its successfully implementation of e-CRM (a user portal). Additionally, EGame has explored the ways of re-using customer resources in the area of R&D innovation in order to achieve sustainable development (see Figure 9-3).

Figure 9-3: EGame's competitive advantage and e-business contribution to it



As Figure 9-2 shows that Dangdang has achieved cost reduction mainly through e-procurement and supplier inventory management. Dangdang has also established partnership relationships with the leading offline book corporation who acts as its distribution channel. In this way, Dangdang could save the cost of inventory. Its online information flow facilitates operational efficiency; the brand loyalty comes from its B2C website which provides personalised services such as recommendation or promotional information (see Figure 9-4).

Figure 9-4: Dangdang's competitive advantage and e-business' contribution to it



But at the same time both companies realised that e-business technologies only create

short-lived competitive advantages rather than sustainable ones. In order to build sustainable competitive advantages, EGame is keeping up e-business technology innovation by establishing a sophisticated operation platform. The company is in the process of adapting its organisational structure as well as organisational culture to support this technological innovation. Although Dangdang holds a formidable 'cost edge' over traditional rivals, in order to gain sustainable competitive advantages, it must be seen to be continuously improving its e-business technologies and logistic systems as its CEO states.

To gain economies of scale, both companies need to extend their customer base. In order to accomplish this, Dangdang has invested heavily in online advertising and co-branding with other Internet companies. Dangdang is also attempting to gain economies of scope by using the same technology platform and delivery infrastructure, while adding new product categories, such as CDs, videos, electronics, clothes and other general merchandise. EGame wants to use e-CRM to re-use customer resources.

As an online retailer, Dangdang believes that its e-business strategy improves the overall competitive capabilities of the book retailing sector. At the same time, however, as the price comparison becomes more straightforward online, e-retailers could face sharper price reductions than offline players.

9.3.6 E-business strategies

To summarise, both EGame and Dangdang are built on Internet-related technologies. Their basic advantages are derived from the capability of each to run 'virtual value chain (Rayport and Sviokla, 1995)'. For example:

1) The smooth running and real time information flow along the value chain.
2) The values created from this information flow, such as the improvement of operational efficiency and delivery of new customer value.

Despite their shared aims, these two companies have adopted different general e-business strategies as illustrated by Figure 9-5. Ultimately, Dangdang appears to position itself as the cost leader through exploring breadth, while EGame aims to achieve differentiation through continuously e-business innovation and e-CRM applications.

Figure 9-5: EGame and Dangdang's e-business strategy

		Competitive advantage	
		Lower cost	Differentiation
Competitive Scope	Broad target	**Cost leadership** **Dangdang** 1. Breadth (economies of scale and scope) 2. E-business technology innovation	**Differentiation** **EGame** 1. Products and e-CRM 2. Integrated online operation platform
	Narrow target	**Cost focus**	**Differentiation focus**

Source: Adapted from Porter (1985), p.11.

CHAPTER 10 CROSS CASE COMPARISON: ANALYSIS AND DISCUSSION

This chapter compares the key differences and similarities between the case companies both within industries and across industries. Meanwhile, the explanations for those are given. A theoretic framework of exploring e-business enabled value creation is proposed. The comparisons focus on the understanding of the e-business concept (presented in Section 10.2), key e-business applications (presented in Section 10.3), the challenges and impacts of e-business applications (presented in Section 10.4 and 10.5), and the e-business strategies (presented in Section 10.6).

10.1 Industry backgrounds and the key features of the case companies

Among the industries investigated, two industries, namely the housing development industry and the manufacturing industry, are experiencing a transition to maturity. Consequently, these industries share some common features: (a) intensified competition; and (b) industry concentration. However, at the same time, there are some events that fuel continued growth for industry participants. For example, changes in government policies have created better opportunities for large leading corporations in the housing development industry; globalisation and technological innovation provide opportunities in the home electrical appliances sector; the government's promotion of 'computerisation' and information infrastructure construction in the sectors such as finance and telecoms has created strong demand for PCs and network hardware.

The online gaming market is also maturing, distinguished by industry concentration and decreased market growth rate; while the online retailing sector is in the stage of

introduction. The leading online retailing companies are busy with increasing market shares and gaining scale economies in marketing, service network, and distribution. Consequently, they have always adopted the low-price strategy approach. Table 10-1 illustrates these key characteristics of these industries.

Table 10-1: The key features of the industries

Industries	The stage of PLC/the key features	Events providing opportunities	Events providing threats
Housing development	1) The transition to maturity. 2) The intensified competition (Fa) and industry concentration (Fb).	1) The changes in government policies has offered better opportunities for leading players e.g. increasing the requirements of operational capital and standardised operations. 2) The availability of international property funds.	1) Buyer sophistication. 2) Although intensified rivalry is eroding industry profitability, the profitability of the average competitor is till high.
M: home electrical appliances	1) PLC: maturity. 2) Fa and Fb.	1) Globalisation. 2) Technological innovation such as market segmentation and collaboration with partners.	1) Global competition increases. 2) Increasing bargaining power of retailers. 3) Lower margins.
M: PC manufacturing	1) PLC: maturity. 2) Fa (fierce price competition) and Fb. 3) Slower growth, narrower profit margins.	1) The national 'computerisation' plan creates strong demand. 2) Using e-business technologies to improve operational efficiency and reduce operational cost.	Fierce price competition and slower industry growth lead to narrower profit margins.
M: networking hardware	PLC: growth.	1) Infrastructure construction in many industries creates strong demand. 2) Globalisation.	Global competition increases.
EC: online gaming	1) The transition to maturity. 2) Fb. 3) Decreased market growth rate.	1) Improving operational efficiency in delivery and distribution channels and online payment solutions. 2) Increase research and development capabilities.	The lack of skilled Chinese game developers results in a lack of new games in the market. Consequences, strong bargaining power for global game providers.
EC: online retailing	PLC: introduction.	1) Increasing market shares. 2) Seeking scale economies in marketing, service network, and distribution.	Fierce price competition leads to low profit margins.

(PLC: product life cycle; Fa: the intensified competition; Fb: industry concentration; M: Manufacturing; EC: e-commerce)

Section 6.2.3 has provided an overview of the case companies. As illustrated in Table 6.6, all the case companies are industry/market leaders in their respective sectors. While the established companies were usually established in 1980s or early 1990s focusing on property development and manufacturing industries, the e-commerce companies were commonly established between 1999 and 2001. Most of the case

companies are large companies with more than 1,900 employees.

Based on the analysis of industry environment, we can identify the key concerns of the case companies in each industry. The key e-business applications adopted by the case companies should be exploited to help in addressing these challenges.

In the housing development industry, industry concentration and high profit margins provide opportunities for leading players. Meanwhile, intensified competition is eroding industry profitability. These changes require companies to gain competitive advantage through lower cost. Also, as customers have gained experience over time, they have become more brand-sensitive. Hence, cost control and brand-building are two key components of the case companies' strategies.

As the manufacturing industry is at the stage of maturity, companies have narrower profit margins. Hence, they emphasize building brands, having competitive costs, and/or making strategic adjustments.

As the EC-retailing sector is at the introduction stage, companies are experiencing high marketing costs and are busy increasing market share. Therefore, marketing cost is a key cost driver. E-marketing offers a cost-effective solution.

Although the EC-online gaming sector is still enjoying high profits, companies lack skilled game developers resulting in strong bargaining power for global game providers and uncertainty in future company development. Hence, R&D capability is a key factor for these companies' sustainable development. Consequently, companies regard online communities and e-CRM as promising approaches to strengthen R&D innovative capability.

In summary, cost control and brand-building are two key concerns shared by the case companies across industries. While strategic adjustment is a key successful factor in the manufacturing industry, R&D capability is a key driver for sustainable competitive advantage in online gaming sector.

In order to manage the opportunities and the challenges facing the industries, the case

companies have adopted some common strategies:

- Adopting expansion strategy either at national or global scale in order to achieve scale economies, and consequently to lower the cost;
- Improving operational efficiency;
- Taking the opportunities for globalisation (within case companies in manufacturing industry and e-commerce industry);
- Technological innovation (within the case companies in manufacturing industry and e-commerce industry).

E-business has been developed in order to support these strategies.

10.2 The understanding of the e-business concept

10.2.1 The factors of the e-business concept

The terminology used

Based on the analysis in sections 7.5.1, 8.6.1, and 9.4.1, we can conclude that 'management information system' rather than 'e-business' is the terminology that these case companies would prefer. This is because the interviewees feel that there is no clear cut distinction between the e-business and prior IT applications although they think that e-business is the most effective way forward. For example, the interviewees have mentioned IT's roles of administration (automate and streamline accounting and control activities) and operation (automate and streamline business processes). This view is consistent with the evolutionary view of e-business. The underlying assumption of this view is that the fundamentals of economics and strategy have not changed and the Internet is the latest stage in the ongoing evolution of IT (Coltman et al., 2000, Porter, 2001).

This finding also reflects the specific feature of e-business development in an emerging economy such as China: companies have to approach automation, informatisation, and e-business at the same time (Ferran and Salim, 2006). However, this finding does not support Ferran and Salim (2006)'s view that developing countries lack the capabilities to develop localized e-business systems because so far, the most successful e-commerce companies in China are indigenous Chinese companies. Our case companies—EGame and Dangdang.com—are among them.

The key aspects of e-business

The following key aspects of e-business have been mentioned by the case companies:

- collaborating (or connecting and building strategic relationships) with business partners;

- facilitating electronic information flow in order to improve internal business operations or supply chain management;
- developing B2C application (within case companies both in manufacturing industry and e-commerce industry);
- implementing e-operation (managing business processes including B2B, B2C and internal management) (within case companies in e-commerce industry only).

For the companies within the housing development and manufacturing industries, the concept of 'e-business' refers to two basic features (see Table 10-2):

1) To integrate and manage internal business operations;

2) To connect and build collaborative relationships with business partners (so called B2B).

Table 10-2: The understanding of the e-business concept

Industries	Housing developers	Manufacturers	EC-lead companies
Key terminologies	Management information system (MIS)	MIS	MIS
Main attitudes	1) B2C is unrealistic; 2) B2B is a positive future direction of management but it is not urgent.	1) E-business is a must-have option to improve supply chain management; 2) E-business is the most effective way compared with its prior IT applications.	1) E-business is a tool, not a source of competitive advantage (EGame); 2) E-business is a source of competitive advantage (Dangdang).
Key aspects	1) Connect and build relationships with business partners; 2) Integrate internal management; 3) Facilitate electronic information flow; 4) Manage interactive communication.	1) Manage internal business operations; 2) Collaborate with business partners (B2B); 3) Manage B2C.	1) E-operation: use the Internet or other electronic methods to manage commerce, which includes transactions and processes; 2) Use e-business to reduce operational cost, i.e. marketing and sales cost.

Besides these two features, for the companies within the housing development industry, an important trend of e-business practice is online customer management, especially in the form of interactive communications.

For some companies within the manufacturing industry such as Haier, TCL Electrical and Founder, B2C operation is regarded as a method of building and strengthening their corporate brand names.

For the EC companies, 'e-business' is implemented to facilitate e-operation, i.e. utilising the Internet or other electronic methods to manage 'commerce' which includes online transactions as well as business processes. E-business is also utilised as a competitive weapon for them to achieve low-cost advantage. For example, e-business is used as marketing and sales channels to reduce operational costs.

Drawing from the literature reviewed in section 3.1.1 (the definition of e-commerce), the findings underline the following e-business definitions:

- Using ICT to conduct business processes electronically along the entire value chain. The aim is to enable the accomplishment of a business goal. (Wigand, 1997)
- Using electronic communications to formulate commercial transactions. (Whiteley, 2000)
- Electronic market transactions and its supportive activities. (Laundon and Laundon, 2002)
- The sharing of business information, maintaining business relationships, and conducting business transactions by means of tele-communication networks. (Zwass, 1996)
- Delivering differentiated business value by combining the system, especially the Internet technology, and processes.(Floris et al., 2001)

The attitudes towards e-business applications

The case companies in each of the industries share commonalities in terms of their attitudes towards e-business applications. However, across industries the differences are apparent (see Table 10-2).

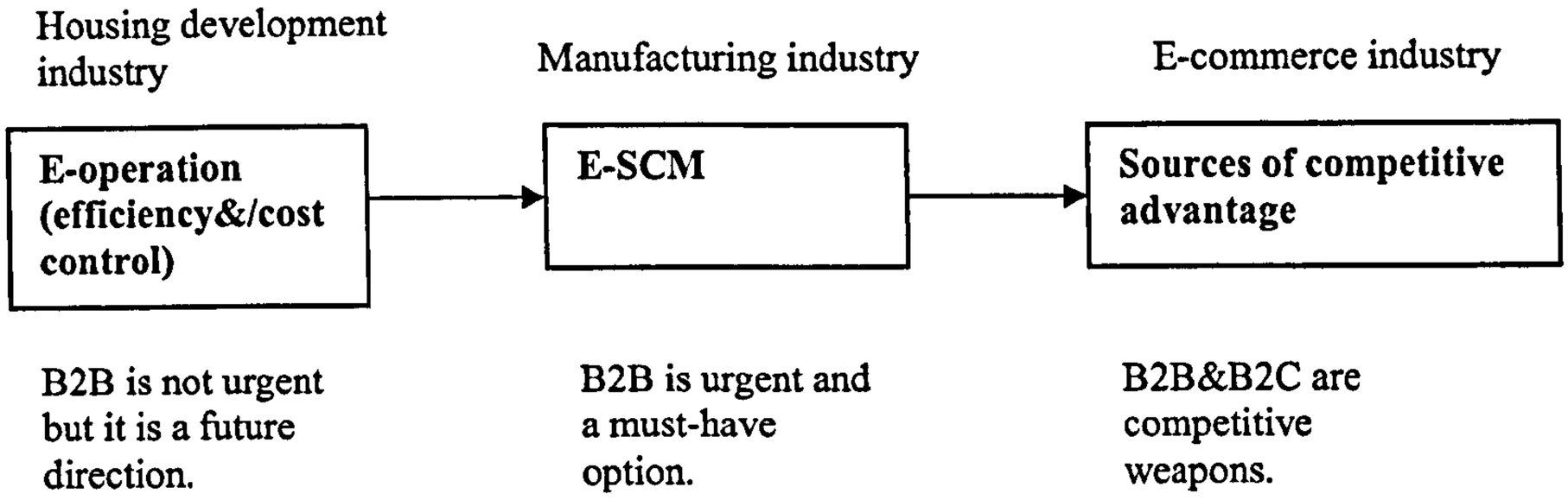
In terms of B2C applications, the case companies in the housing development industry regard these as unrealistic; the case companies in the manufacturing industry think it is not strategically important that they should explore them; for the case companies in the e-commerce industry B2C is a core application.

In terms of B2B applications, the case companies in the housing development industry see these as a positive future direction for management but that adoption is not urgent; the case companies in the manufacturing industry think it has a strategic role and it is a must-have option in order to improve supply chain management; for the case companies in the e-commerce industry B2B is another core application.

Based on the aforementioned analysis, an apparent difference was observed between Internet pragmatists (here including property developers and manufacturers) and Internet pioneers (here referring to EC companies)—their attitudes towards B2C application. For the Internet pioneers, the B2C application is an integral component of e-business application. While for the Internet pragmatists, B2C application is not a must-have option or is only a channel of promoting brand loyalty. An explanation could be the B2C readiness of the Chinese market. By 2005, Chinese customers were not ready to purchase via B2C channel. Since 2008, accompanying the rapid growth of the acceptance of online payment and the improvement of logistic services, Chinese customers are willing to buy more and more categories of products online. As a consequence, Internet pragmatists have become more proactive in B2C. They have either built B2C websites or used e-marketplace providers.

Meanwhile, the focus of the e-business applications within the case companies differs from industry to industry (See Figure 10-1). For the leading housing developers, e-business is one of the tools for improving operational efficiency and cost structure. For the leading manufacturers, e-business is a must-have option to improve their supply chain management. For the EC companies, e-business can be a source of competitive advantage, e.g. through the achievement of economies of scale and the integration of e-platforms.

Figure 10-1: The focus of e-business applications across industries



As illustrated in Figure 10-1, we observed different patterns of attitudes towards different categories of e-business applications and the focus of e-business applications across industries. This finding is consistent with Porter (2001) and Fahy and Hooley (2002). Fahy and Hooley (2002) suggest that the Internet has different impact on Internet pioneers and Internet pragmatists. Porter (2001) points out that dot-coms and established companies are facing different strategic imperatives. Moreover, our finding develops this argument further by identifying the different strategic imperatives of established companies across industries. The differences derive from different key management challenges faced by the companies across industries as explained in the next section (Section10.2.2).

10.2.2 The reasons for e-business adoption

Comparing the findings formed in sections 7.5.2, 8.6.2 and 9.4.2, we can conclude that, for the companies who have actively explored e-business applications, e-business is a tool for solving key management challenges (see Table 10-3). For example, the case companies in the manufacturing industry are facing three key challenges: (a) globalisation; (b) inaccurate forecasts along the supply chain; (c) decreased profitability. For these companies, B2B is a tool for surviving because of e-business' capability to improve supply chain management and manage marketing extension. For e-commerce companies, e-business is a tool for exploring new

business opportunities such as new buyer segments and new channels. For Vantone-Ehouse, e-business (e.g. interaction with customers) is a method of managing high risk in the property development industry. Another way for housing developers to avoid the high risk involved in their industry life cycle is adopting a national expansion strategy. This is because business cycles are out of synchronization across the various provinces. E-business has been used to support this expansion. For example, Vanke has adopted e-procurement to control nation-wide procurement.

For property developers who did not view e-business application as urgent or important, e-business is experimented with as a way of improving operational efficiency.

Based on whether e-business is used as a tool for solving key management challenges, we can categorise the reasons for e-business applications within the case companies (see Table 10-3). Under this framework, there are sub-reasons for why these case companies have adopted e-business actively. For example, for the manufacturers, the reasons are to improve speed-to-market, collaborations with business partners and globalisation management. These reasons for adoption are motivated by the necessity of solving the key management challenges encountered.

Table 10-3: The reasons for e-business applications

Industries	Housing developers	Manufacturers	EC-lead companies
Key management challenges	High risk/risk control.	1) Globalisation; 2) Inaccurate forecast along the supply chain; 3) Decreased profitability.	To explore new business opportunities in new buyer segments or new channels.
Using e-business to solve these challenges	Yes.	Yes.	Yes.
Sub-reasons for adoption	1) Improving operational efficiency/employee efficiency. 2) Regional/national expansion (Vanke and Vantone-Ehouse).	1) Improving speed-to-market; 2) Managing collaborative relationships with business partners esp. channels; 3) Managing globalisation.	1) Operating business processes online; 2) Managing virtual value chain.

10.3 Key e-business applications

10.3.1 Key e-business applications and their contribution to sources of competitive advantage

Based on the analysis of sections 7.5.3, 8.6.3 and 9.4.3, we can set out the key e-business applications adopted by the case companies and their relationships with the sources of competitive advantage (See Table 10-4).

Table 10-4: Key e-business applications adopted by the case companies and their contributions to the sources of competitive advantage (SCA)

Industries	Types (T)	Sub-types	E-business applications (VC framework)	SCA (RBV)	Competitive advantage (CA)
Housing development	T1	T1.1	E-CRM (B2C orientation), E-forums	SCA1:brand loyalty	CA1: differentiation
		T1.2	E-CRM (B2C)	SCA2: innovation	CA1
	T2	T2.1	E-procurement	SCA3: cost reduction	CA2: low-cost advantage
		T2.2	E-procurement	SCA4: SC linkages (coordination)	CA3: speed
	T3		B2C website	SCA1	CA1
	T5		KMP	SCA5: efficiency (in communication & employees)	CA1 & CA3
Manufacturing	T1	T1.1	E-CRM (B2C)	SCA1: brand loyalty	CA1
		T1.3	E-CRM (B2B, channel management)	SCA4: SC linkages (coordination)	CA3: speed
	T2	T2.1	E-procurement	SCA3: cost reduction	CA2: low-cost advantage
		T2.2	E-procurement	SCA4	CA3: speed, CA1
	T3		B2C website	SCA1	CA1
	T4		E-VCM/ E-SCM (ERP and/or EIP)	SCA6: online information capabilities	CA1, CA2 & CA3
E-commerce	T1	T1.1	E-CRM (B2C)	SCA1:brand loyalty	CA1
		T1.2	E-CRM (B2C, virtual communities)	SCA2: innovation	CA1: differentiation
	T2	T2.1	E-procurement	SCA3: cost reduction	CA2: low-cost advantage
		T2.2	E-procurement (supplier inventory management system)	SCA4: SC linkages (coordination)	CA3: speed
	T3		B2C website	SCA1	CA1
	T4		E-VCM/ E-SCM (ERP & e-business system)	SCA6: online information capabilities	CA1, CA2 & CA3

(VC: value chain, RBV: resource-based view, CRM: customer relationship management, KMP: knowledge management platform, ERP: enterprise resource planning, EIP: enterprise information portal; SC: supply chain, VCM: value chain management, SCM: supply chain management)

The findings identify that e-business applications can potentially lead to six categories of sources of competitive advantage: brand loyalty (SCA1), innovation (SCA2), cost reduction (SCA3), supply chain linkages (SCA4), efficiency (SCA5), and online information capabilities (SCA6) (see Table 10-4).

Among them, compared with the theoretical framework proposed in section 5.2 Chapter 5 (Figure 5-3), two new types of sources of competitive advantage (SCA) have emerged: innovation (SCA2) and supply chain linkages (SCA4). Meanwhile, complementarities, novelty, differentiation, and marketing extension, which were proposed in the theoretical framework (Figure 5-3), haven't been mentioned explicitly by the case companies as sources of competitive advantage. Although brand loyalty (SCA1) has been mentioned by many researchers (e.g. Amit and Zott, 2001, Steinfield et al., 2002), it is not cited as a distinct source of competitive advantage. Rather it is listed as a sub-category of categories such as 'lock-in' (Amit and Zott, 2001) and 'improved trust' (Steinfield et al., 2002). In this research, brand loyalty (SCA1) clearly emerges as a SCA. Meanwhile, in the research, e-business applications have been found to make a contribution to marketing expansion. Marketing expansion hasn't been mentioned as a SCA.

Drawing from the literature reviewed, the explanations for each type of SCA are offered in the following:

- SCA1: brand loyalty. RBV theory suggests a firm's strategic assets, such as its brand name and buyer-seller trust, contribute to repeated transactions (Amit and Zott, 2001). Amit and Zott (2001)'s research reveals several ways in which brand loyalty can be enhanced in e-business: (1) loyalty programs and customisation; (2) establishing trustful relationships with customers e.g. offering customers transaction safety and reliability; (3) forming bonding between participants and e-business offering through creating virtual communities (Hagel III and Armstrong, 1997). Virtual communities can also create network externalities, hence; increase the size

of customer base. Steinfield et al., (2002) found that most of their B2C cases relied on their established brand names when building an e-commerce channel in order to quickly build trust.

- SCA2: innovation. Facilitated by e-business, innovative solutions are sought in structuring and re-structuring the distribution channels through the approaches of disintermediation and reintermediation (Zwass, 2003). With e-business providing universal supply-chain linkages, process innovation can be relatively rapidly achieved through outsourcing. Consequently, best-of-breed processes can be deployed, consistent with maintaining the firm's strategic capabilities. Virtual communities and e-forums of customers, if nourished by corporate web sites, can be an important source of innovation.(Zwass, 2003)
- SCA3: cost reduction. Based on case study, Steinfield et al., (2002) found four areas of cost reduction in e-business: inventory (e.g. smaller size of physical stores), labour (e.g. greater labour efficiency and customer self-service), promotion/marketing and distribution/delivery (Steinfield et al., 2002).
- SCA4: SC/VC linkages (coordination). E-business as a universal supply-chain linkage makes inter-company coordination increasingly feasible and cost-effective; the processes in corporate value chains can be outsourced to the most efficient sources (Zwass, 2003). E-business is also a means of establishing long-term relationships and hence, a collaboratory (Zwass, 2003). "Relationship networks emerge as long-term alliances of companies that aim to gain access to best-of-breed business processes and core competencies, as well as to achieve economies of scale and scope that are not possible for them individually (Zwass, 2003, p.17)." The crucial advantages are capital economies and major savings in lead time to the roll-out of a new good or service.
- SCA5: efficiency. Amit and Zott (2001) found that transaction efficiency is one of the primary value drivers for e-business. And they suggest that efficiency

improvement can be realised in a number of ways: (1) by reducing information asymmetries between buyers and sellers through timely and relevant information. (2) By reducing distribution costs, streamlining inventory management, simplifying transactions, both vendors and customers can benefit. For example, customers can benefit from scale economies through demand aggregation and bulk purchasing. Vendors can streamline their supply chain and speed up transaction processing and order fulfilment.

- SCA6: online information capabilities (OIC). Based on RBV, Barua et al., (2004) suggest to use OIC to solve uncertainty in supply chain management and customer relationship management. They contend that OIC is a higher order of resource. OIC can lead to improved operational and financial performance.

It is worth noting that SCA6 (OIC) is a step forward of SCA4 (SC/VC linkages). This is because SCA4 could include linkages between companies and upstream companies, or downstream companies or throughout the value system. OIC are the basis for VC linkages throughout the value system.

This research will follow Porter's (1985) suggestion that there are two basic types of competitive advantage firms can possess: low cost or differentiation. According to Porter (1985), a firm can enhance its differentiation by being unique. This can be achieved through better coordination internally or with suppliers or channels. Porter (1985) suggests there are two major ways that a firm can gain a cost advantage: control cost drivers and reconfigure the value chain.

Additionally, in a rapid-cycle business environment, speed is regarded as a basic type of competitive advantage. Stalk Jr (1988) argues that time-based competitive advantage was the key reason that leading Japanese manufacturing companies (e.g. Toyota and Honda) and Western companies (e.g. Federal Express and McDonald's) win the competition. For these companies, time has become the overarching measurement of performance. These companies compete for rapid response to consumer demand and

new products and technologies introduced to the market. As a consequence, these companies also reduce costs, improve quality and flexibility, and stay close to their customers. Sapkauskiene and Leitoniene (2010) argue that globalisation and e-business bring changes to the nature of time-based competitiveness. As a consequence, time gains greater importance as speed, which is required by business and consumer expectations, continues to increase.

In this research, speed-to-market clearly emerges as a type of competitive advantage which was mentioned by the interviewees from both manufacturing and B2C industries. Based on the e-business applications' impact on these sources of competitive advantage, we can categorise e-business applications within case companies into five generic types (shown in Table 10-4).

Type 1: E-CRM→CA1: differentiation & CA3: speed

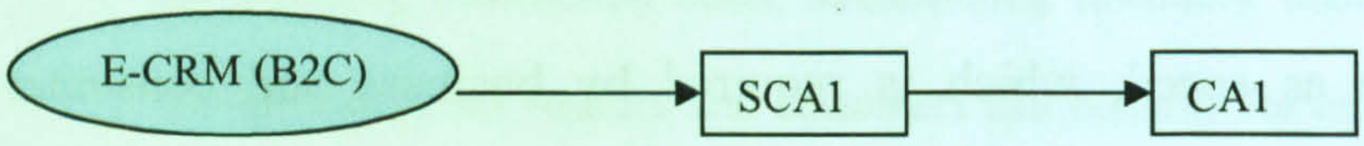
CRM is a synthesis of principles from relationship marketing and customer-focused management (Hendricks et al., 2007). CRM is a strategy to understand and predict consumer behaviour (Kohli et al., 2001, O'Halloran, 2003). Organizations can then build long-term relationships with their identified profitable customers by engaging in potentially win–win situations (Massey et al., 2001, Storbacka and Lehtinen, 2001). Personalizing services, customizing products, and cross selling are some examples of methods to increase customer profitability. CRM also results in marketing efficiency as appropriate strategies are targeted only at profitable customers (Pine et al., 1995, Hsieh, 2009).

CRM systems (E-CRM) provide the infrastructure that facilitates long-term relationship building with customers (Hendricks et al., 2007). Some examples of the functionality of CRM systems are sales force automation, data warehousing, data mining, decision support, and reporting tools (Katz, 2002, Suresh, 2004).

Our findings reveal that the case companies' main objective for using E-CRM is to build

and enhance brand loyalty, which can lead to differentiation advantage (T1.1, see Figure 10-2).

Figure 10-2: Type 1.1 Employing E-CRM (B2C) to achieve brand loyalty and then differentiation



SCA1: brand loyalty

Within the case companies in the housing development industry, E-CRM is a new trend of development. For example, both Vanke and Gemdale have firstly adopted e-forums for their customers. E-forums serve as a tool for understanding customers. Then they have implemented the E-CRM system.

Within Vanke, the E-CRM system (integrated with the sales management system) which managed customer data and complaints, as well as customer communities, went online in 2006.

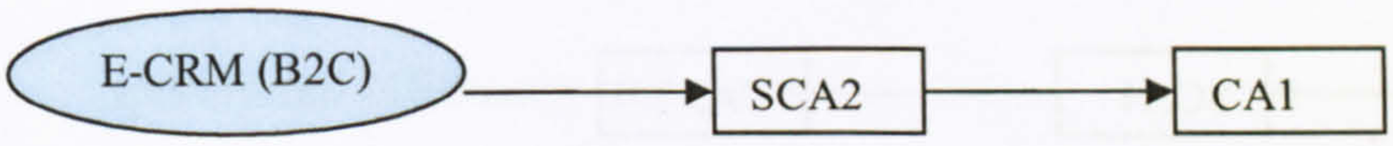
Within Gemdale, by integrating data from the sales system and the customer service system (E-CRM), employees can get a single, enterprise-wide view of a customer which has led to vast improvement in customer service, and hence, enhancing customer loyalty.

E-CRM is the most important e-business application within Vantone-Ehouse. Within Vantone-Ehouse, E-CRM has not only contributed to brand loyalty (SCA1), but also led to innovation (SCA2). Its E-CRM provides a multi-channel communication between project companies and customers, so that customers can jointly manage house projects. Through its E-CRM system, Vantone-Ehouse allows its customers to supervise house design and production process. Through interaction with customers and providing personalised services to customers, Vantone-Ehouse has improved the transparency of the production process, and hence, lowered customer's risks and improved customer loyalty.

Meanwhile, facilitated by E-CRM, Vantone-Ehouse can adopt a made-to-order business

model. Customers choose their favourite housing design first, and then jointly-manage the house project. As a result, Vantone-Ehouse has achieved process innovation and is in a better position to achieve product innovation based on their interaction with customers. Similarly, Vanke has improved its product innovation capability by integrating customers' views from its online and offline CRM. (T1.2, see Figure 10-3)

Figure 10-3: Type 1.2 Employing E-CRM (B2C) to achieve innovation and then differentiation



SCA2: innovation

In summary, E-CRM (B2C) has been used in the housing development industry for two types of functions:

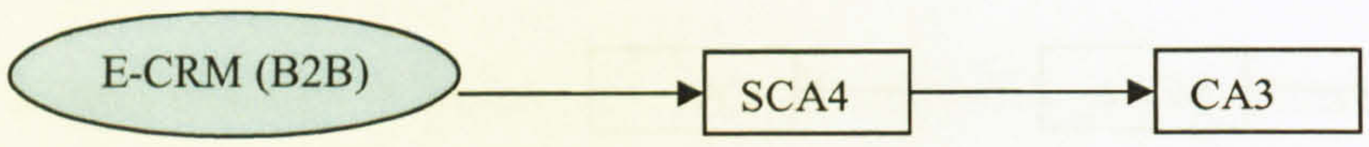
(1) Achieving and enhancing customer loyalty. Managing customer data such as customer complaints and requirements in order to improve customer service cost-effectively. Moreover, E-CRM has been explored by Vanke and Gemdale to facilitate cross selling and to maintain long-term relationships with customers, for example serving as a real estate agent to sell and to rent second hand houses that were developed by the companies. Vantone-Ehouse has used E-CRM to realise interactions among customers and companies for the aim of achieving personalisation cost-effectively.

(2) Facilitating innovation. Vanke and Vantone-Ehouse have adopted E-CRM to manage customer communities so that customers' perspectives can be added into the R&D processes which facilitates product innovation and reduces the risks of property development.

For the case study manufacturers, E-CRM (B2C) has been used to manage important customers with the aim of improving customer service and hence increasing customer profitability.

Meanwhile, using E-CRM (B2B) to manage sales and distribution channels is a key application within the manufacturing industry. The web-facilitated collaboration (T 1.3, see Figure 10-4) between these companies and their business partners is a key success factor for gaining high profits or surviving within the industry since value chain visibility can greatly reduce the uncertainty of supply and demand.

Figure 10-4: Type 1.3 Employing E-CRM (B2B) to achieving SC linkages and then speed



SCA4: SC linkages (coordination)
CA3: speed

Haier's E-CRM (B2B) has been used to manage big dealers and important customers. Its E-CRM includes two functions: online order facility and dealer inventory management. The dealer inventory management system contributes to speed-to-market as Haier can get sales data from dealers with high speed and improved accuracy. Within Haier, E-CRM and offline CRM have been operated in parallel to cope with the outdated information systems of some big dealers. Another function of Haier's e-CRM system (through dealer integration) is to manage big dealers such as department stores and big stores which sell Haier's products exclusively.

By exploiting sales management systems (E-CRM (B2B)), TCL Electrical allows its dealers to move many activities online, such as placing orders, paying bills, and transferring business information. Moreover, the timely and accurate information flow has helped its dealers to improve their operational efficiency. Thus, TCL Electrical can significantly reduce time-to-market.

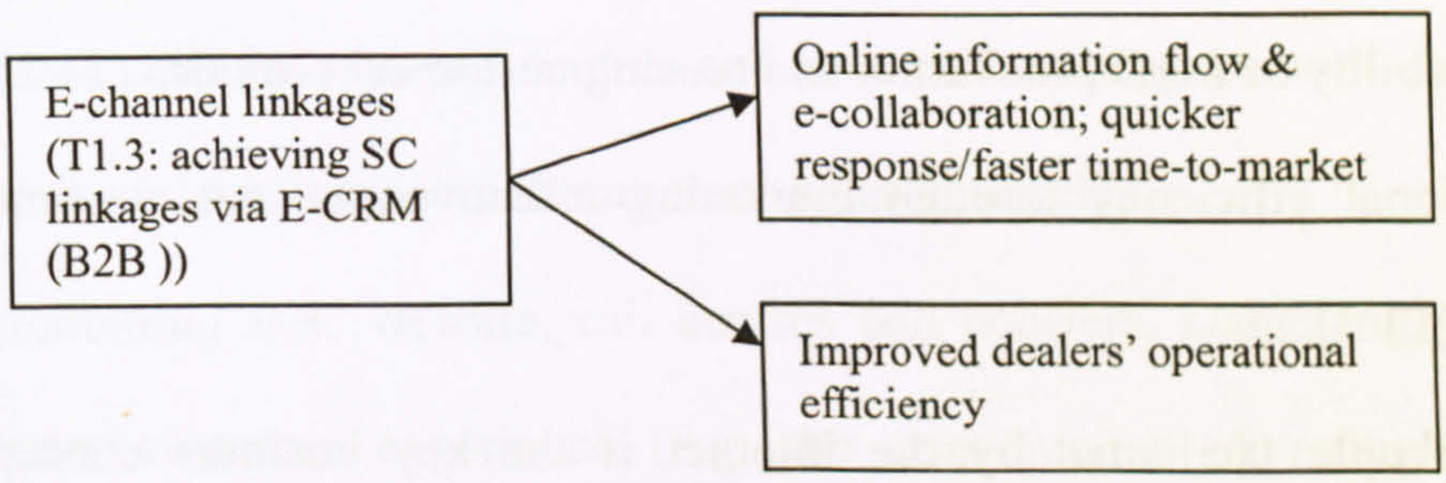
Similarly, e-business has played an important role in helping Founder to gain advantage in channel management. For example, Founder's dealer management system helps to strengthen dealers' differentiation and provides training for dealers. It also facilitates close collaboration with dealers and timely online information flow.

These three companies share two key advantages through exploiting e-channel management (See Figure 10-5):

1) Improved information accuracy and online information flow facilitate e-collaboration between the companies and their distributors. The exploiting of e-channel linkages has led to reduced time-to-market, which is a key success factor in the industry.

2) E-channel management provides better support to dealers. Consequently, dealers' operational efficiency improves.

Figure 10-5: Two key benefits of e-channel linkages



One type of e-collaboration that could be facilitated by SC linkages is to provide shared data to support collaborative decisions. For example, promotions require close cooperation between manufacturers and their dealers. By exploiting e-business technologies, the planning data is jointly filled in by both manufacturers and dealers.

Online information flow allows manufacturers to view dealers' orders, procurement needs, and inventories in real time which gives them more time to react to market changes (e.g. redefining price strategies and subsidiaries' directions). As a result, they can obtain greater flexibility and responsiveness to changes in demand.

At the same time, differences exist among the case companies in terms of the application of E-CRM (B2B). For example, the application of a dealers' inventory management system was not successful within TCL Electrical but has applied well within Haier and Founder. This is due to the difference in their sales model. Haier and Founder's dealers sell their products exclusively, while TCL Electrical's dealers do not.

Hence, TCL Electrical's dealers did not want to use this system to manage their own inventory because they did not want to manage two inventory systems—one for TCL Electrical's products; the other for other manufacturers' products.

In summary, the E-CRM has been used in the manufacturing industry for two types of functions: (1) the improvement of customer services, hence, customer satisfaction (T1.1, see Figure 10-2); (2) the realisation of collaboration in SCM (T1.3, see Figure 10-4).

For the case e-commerce companies, E-CRM is a key application which has been implemented to achieve three types of functions:

(1) building and strengthening brand loyalty through interaction and personalisation (T1.1).

(2) improving the capability of R&D innovation and reusing customer resources (T1.2).

(3) improving operational efficiency through marketing effectiveness and customer resource integration (T1.3).

Interaction between people facilitated by the Internet is the key business concept adopted by EGame and Dangdang. Within EGame, E-CRM is a key application to realise interaction, resource integration, marketing efficiency, and customer-oriented R&D innovation. For example, through EGame's VIP user platform, users can use one account to register to all the services. Moreover, EGame can develop products and carry out marketing activities based on its users' behaviours. As a consequence, EGame is in the process of leveraging E-CRM as a source of competitive advantage by exploring E-CRM's full potential in value creation, which includes T1.1-3.

According to Kennedy (2006), opportunities exist for companies to reinforce their competitive advantages through the extension of the customer-centric strategic orientation to incorporate innovative E-CRM strategies and technologies. Through data and Web integration, E-CRM offers EGame a single, enterprise-wide view of a customer which has led to vast improvement in customer service and facilitated better marketing segmentation. Integrating data from multiple sources, both online and offline

channels, is a critical issue in facilitating successful and valuable E-CRM analytics (Nemati et al., 2003). Using the results of CRM to identify and implement special customer services is an emerging strategy (Anderson et al., 2007).

Internet-base CRM technology (e.g. e-marketing and B2C website) has allowed Dangdang to personalise its interactions with individual customers. Dangdang uses the Internet and mobile phones as its main marketing and sales channels. Through these channels, it is possible for Dangdang to provide personalised suggestions to its customers. On its B2C website, customers can log on to their personal pages to give feedback on the implementation of their orders and to request to change products or refund. This Internet-based interaction has allowed Dangdang to cut the number of phone calls into its call centres and provided employees with one computer system to tap for information across numerous sales channels.

Combining B2C website, call centres and couriers, Dangdang provides its customers better customer experience (e.g. the convenience of refunding in seven days if customers are not satisfied with the products. Most Chinese offline shops do not offer this option. So offline customers usually have great difficulty in refunding if they simply do not like the products that they bought. The implementing of seven days 'peace of mind' helps Dangdang to gain customers' trust and loyalty. Moreover customers, who have spent a certain amount of money, can become Dangdang's VIP customers and get a further discount.)

Moreover, by applying E-CRM Dangdang has localised the Amazon Model. The key improvement is to empower its customers through respecting local customers' buyer behaviour and habits. For example, the following new functions have been added by Dangdang exclusively since 2007:

- Virtual book shelf: customers can put their favourite books on the shelf which can be viewed by other customers. Hence, customers can share their views on the most popular books. For each book, customers can write comments. Also, customers

can add a person/persons as the people that they pay close attention to. When these people have added a new book in their shelf, Dangdang will send a message to remind the customers.

- Users' comment on delivery service: Dangdang outsources delivery service to third-parties. Customers are encouraged to make comments on the quality of the delivery service. However, outsourcing logistics does not appear to be a better way of providing delivery service. For example, Dangdang's key competitor—Joyo-Amazon, provides quicker delivery service as the company has built up its own delivery facility to guarantee quality delivery service.
- Q&A: Dangdang also functions as a marketspace that links Dangdang's user base with small merchants. Before making an order, customers can propose questions on a product. Other customers and merchants can give answers to the questions.
- Online communities: Dangdang provides space and support for its customers to form online communities.

In summary, E-CRM has been applied by the case companies to manage individual consumers (E-CRM-B2C, mainly adopted by the housing developers and EC companies) and business partners (E-CRM-B2B, mainly explored by the manufacturers) by the case companies. Through the implementation of E-CRM-B2C, two types of SCA can be achieved:

T1.1 brand loyalty: improved customer services leads to improved customer satisfaction. Interactions among people and companies help to achieve personalisation cost-effectively.

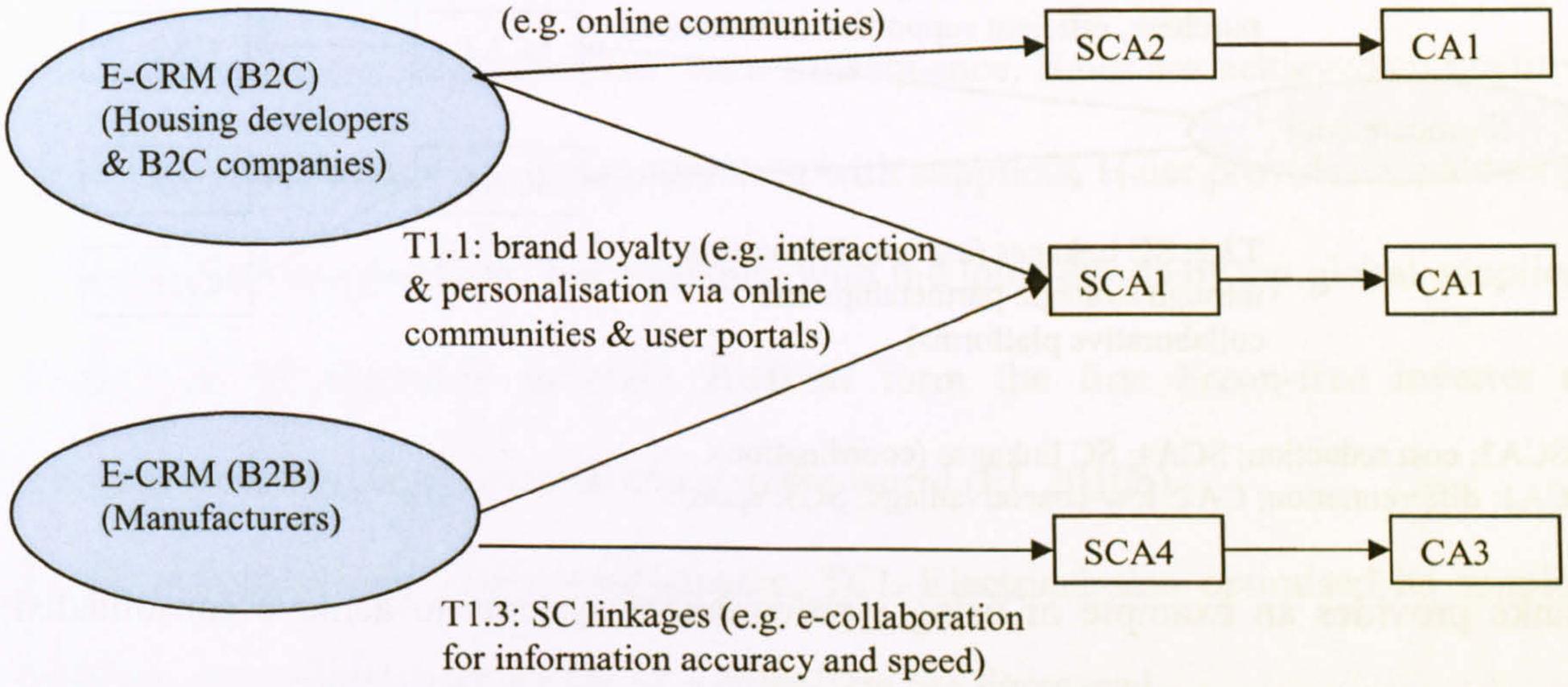
T1.2 customer-led innovation: R&D innovation capability is improved by adding a customer perspective. The most commonly used tool is the building of online-communities.

As for E-CRM-B2B, the main objective is to achieve SC linkages (T1.3). Consequently, the case companies can improve SCM in speed and information accuracy. E-

collaboration is a key method to achieve these goals. Meanwhile, E-CRM-B2B has been used by Haier and STE to manage key customers with the aim of improving customer satisfaction and loyalty (T1.1).

Therefore, we can summarise the key types of E-CRM applications (see Figure 10-6).

Figure 10-6: Three types of E-CRM applications



SCA1: brand loyalty; SCA2: innovation; SCA4: SC linkages (coordination).
CA1: differentiation; SC3: speed.

As illustrated in Figure 10-6, while the case companies in the housing development and B2C industries exploiting E-CRM (B2C) to achieve differentiation advantage, the case companies in the manufacturing industry mainly use E-CRM (B2C) to obtain competitive advantage in speed.

Type 2: E-procurement→CA2: low-cost advantage &CA3: speed

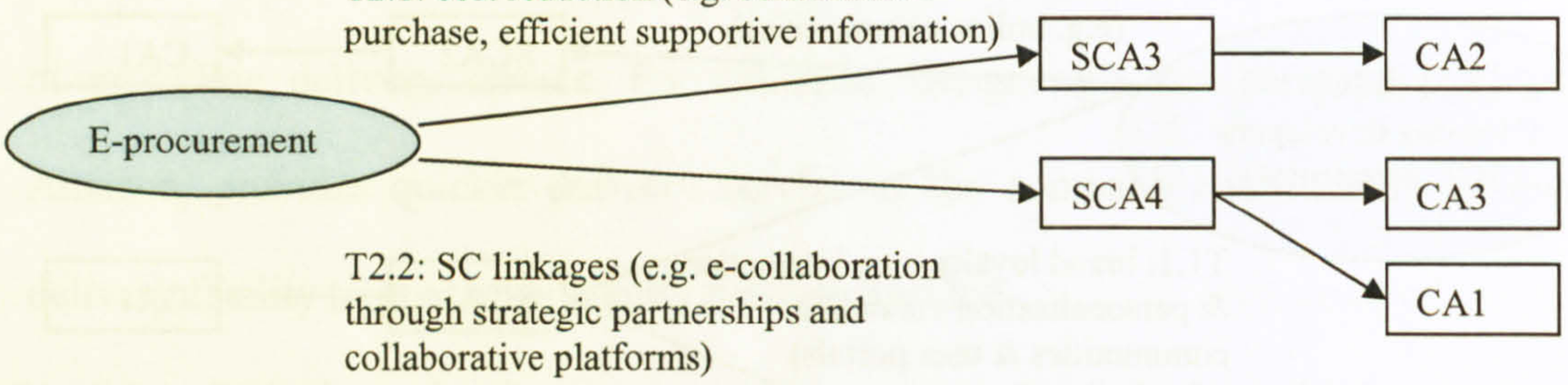
E-procurement is a key e-business application adopted by the case companies in order to achieve cost savings. Two generic types of e-procurement have been explored by the case companies (see Figure 10-7):

- T2.1 cost reduction: Through collective buying and consolidated purchase, companies can gain stronger bargaining power over suppliers. Efficient information

flow provides buyers with better business support.

- T2.2 SC linkages: The type of linkages explored by the case companies include: (1) building strategic partnerships with suppliers; (2) establishing collaborative platforms such as supplier inventory management system.

Figure 10-7: Two types of E-procurement applications



SCA3: cost reduction; SCA4: SC linkages (coordination).
CA1: differentiation; CA2: low-cost advantage; SC3: speed.

Vanke provides an example of using e-procurement systems to achieve consolidated purchase, strategic partnership with suppliers, and control of the subsidiaries' purchase expenditure. As a consequence, Vanke has achieved cost reduction and a better position to manage the purchasing activities of subsidiaries across regions.

Haier and TCL Electrical provide examples of using e-procurement systems to achieve consolidated purchase, and consequently, significant cost savings. Moreover, through exploring SC linkages, e-collaboration and efficient information flow, it is possible for Haier to exploit a made-to-order business model.

Within the EC industry, Dangdang has explored the supplier inventory management system, which is integrated with the e-procurement system in order to achieve better collaboration with suppliers and more timely information flow (T2.2 SC linkages). Hence, Dangdang can achieve advantage in speed, which is reflected by efficiency of SCM.

In the process of adopting e-procurement, the case companies in the manufacturing industry have optimised their supplier network (e.g. Haier and TCL-Electric) so that they can either purchase at global scale or strengthen partnership relationships with

suppliers. Suppliers' network-optimisation is very important to Haier and was concentrated at a specific period of time. This process has led to improved relationships between Haier and its suppliers. For example, some big suppliers have built factories in Qingdao especially for Haier's procurement. As a result, Haier can gain advantage in speed and low-cost.

In recent years, Haier has exploited strategic partnerships with suppliers a step further by achieving innovation in products. As a consequence, Haier has achieved competitive advantage in differentiation. By cooperating with suppliers, Haier provides a wide range of energy-efficient products. For example, with the joint efforts of top global suppliers, Haier took the initiative in early 2010 to form the first Freon-free inverter air conditioner low carbon industrial chain in the world (EI, 2010b).

In the process of applying e-procurement, TCL Electrical also optimised its supplier-network. As a result, the number of its suppliers has decreased.

To summarise, e-procurement has served as two basic functions by the case companies: B2B BUY-side (T2.1 cost reduction) and collaborative platform/linkages (T2.2 SC linkages) (See Figure 10-7). These two functions lead to following advantages: cost-savings (obtain purchase scale and maintain tight control over the purchasing process), logistics-efficiency (JIT), speed (reduced cycle times), and coordination (integration of processes and product design).

Type 3: B2C websites→CA1: differentiation

The case companies both in the housing development and manufacturing industries have explored B2C application as an experiment. In the housing development industry, by 2006 only Vantone-Ehouse had explored B2C actively. Two main functions had been exploited: (1) providing personalised made-to-order services; (2) as an interactive communication channels to support personalisation. Through interaction with customers,

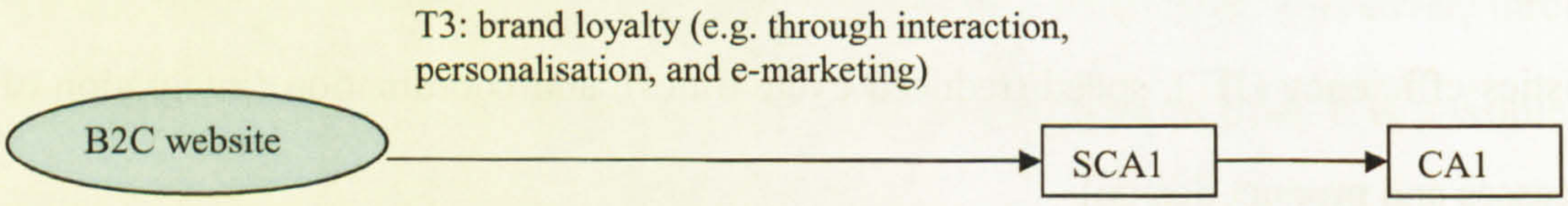
customers can co-design their houses with Vantone-Ehouse. Also, as an e-marketing channel, the B2C website helped Vantone-Ehouse to extend its customer base to foreign customers.

In the manufacturing industry, Haier is the first-mover in the B2C area. Its B2C website sells its own products. The aim is to promote its brand loyalty as well as to attract new customers in the rural areas. B2C applications have made contribution to the growth of offline sales and have improved communication between Haier and its customers. In addition, Haier wanted to establish first-mover advantage in the B2C area and to seize the opportunities when the market is ready.

Founder's B2C website sells its own branded products and provides customer services.

In summary, the following applications of B2C websites have been used by these companies in order to enhance brand loyalty and achieve differentiation strategy: (1) e-marketing and interaction; (2) personalisation (within housing development industry); (3) extending customer base (See Figure 10-8).

Figure 10-8: T3 Employing B2C websites to enhancing brand loyalty and then differentiation



SCA1: brand loyalty; CA1: differentiation.

Type 4: E-VCM/SCM→CA1: differentiation

A key source of competitive advantage shared by the case companies in the manufacturing and EC industries is online information capabilities (OIC). OIC not only allow a firm to share tactical and strategic information with business partners, but also enable low-cost execution of customized transactions (Barua et al., 2004). OIC forms

the basis for e-SCM.

Web-based SCM networks improve coordination between trading partners by linking a firm's forecasting and production-planning systems with its suppliers' and distributors' systems. Through inter-organisational systems all organisations in the SC could gain from sharing information by the reduction of supply and demand uncertainties. Web-based SCM networks also offer great flexibility and responsiveness to changes in demand (Raisinghani et al., 2005). Haier illustrates the significant impacts of e-SCM in terms of achieving faster time-to-market and collaboration with suppliers and customers in product design. By exploiting OIC, Haier has realised made-to-order. As a result, the whole production cycle has been shortened to 7 to 10 days from previous 36 days. This brings Haier significant competitive advantage.

For the case manufacturers, by obtaining OIC, SC visibility can be achieved. Chaffey (2002, p.242) defines SC visibility as access to up-to-date, accurate, relevant information about the SC process for different stakeholders. TCL Electrical illustrates the need of SC visibility. Within the company, e-business was adopted to address the challenge of inaccurate marketing forecasts. Hence, they experimented with their dealer inventory management system with the aim of achieving quick response to market demands.

Typically, by exploiting e-VCM, the case companies have achieved enhanced efficiency and collaboration throughout supply chains. These benefits can lead to some other advantages:

1) enhanced efficiency leads to reduced time-to-market and cost reduction;
2) enhanced collaboration throughout the value chain leads to reduced time-to-market and enhanced quality and brand image.

In reality, the key factors that decide the success of e-SCM/VCM are trust-building and collaboration between companies and their business partners. The difficulty of adopting the dealer management system within TCL Electrical demonstrates the importance of

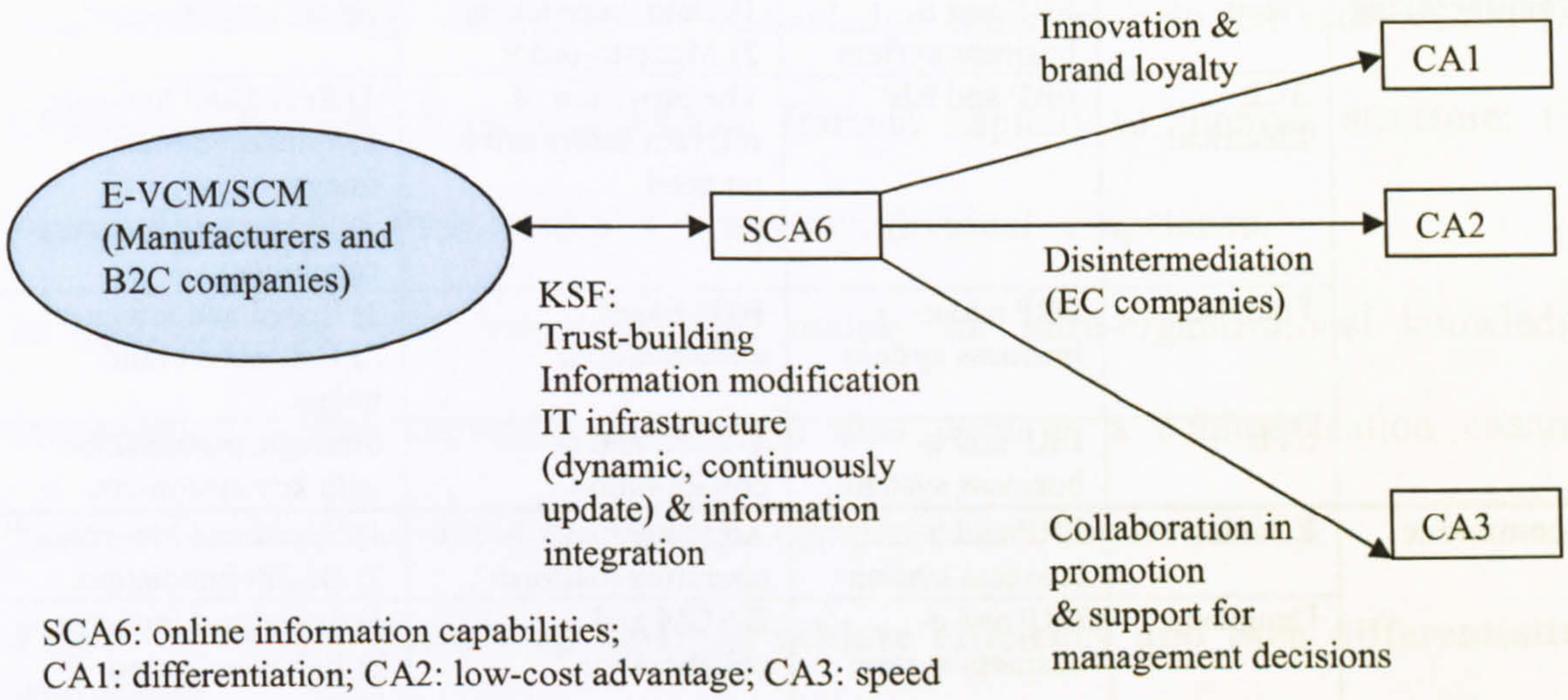
trust-building. Dealers expressed many concerns over the adoption of the dealer management system such as the risk of their information being disclosed to other parties and the changes in bargaining power. Founder encountered similar difficulty. Founder uses websites to manage business partners. However, the upstream and downstream partners are unwilling to disclose accurate information in real time. Hence, Founder has to modify received information before using it. Founder learned that it is very important to build mutual trust with business partners during the information exchange process so that they can get more accurate information.

Within the case companies in the EC industry, OIC are the foundation of other e-business applications such as disintermediation and personalized marketing. Hence, both case companies are continuously building up their OIC and e-business infrastructures. With integrated user platform, EGame can significantly save cost in marketing and distribution. EGame regarded this process as an approach to gain competitive advantage because building an integrated user platform takes years of time. Furthermore, this capability cannot be easily copied by the competitors.

Despite OIC-related advantages explored by the manufacturers (e.g. speed, collaboration and innovation), EC case companies have explored another advantage—cost reduction through disintermediation. Figure 10-9 illustrates the key constructs of T4: employing E-SCM to achieve OIC and then differentiation and speed.

In terms of the IT infrastructure adopted by the case companies in order to achieve E-SCM, ERP provides integrated functions for major business functions such as production, distribution, sales, finance and HRM (Chaffey, 2002). The ERP software improved intra-firm co-ordination between frequently disparate functions as conceptualised in Porter's value chain. ERP created an 'electronic nervous systems' to link these functions together, shedding light on the relationship between transportation costs, inventory levels, and operations (Lawton and Michaels, 2001).

Figure 10-9: T4 Employing E-SCM to achieve OIC and then advantages in low-cost, differentiation and speed



SCA6: online information capabilities;
CA1: differentiation; CA2: low-cost advantage; CA3: speed
KSF: key success factors

The Internet-based e-business system facilitated more information sharing between firms, extending the benefits of ERP from the value chain of an individual firm to the entire value system of firms, their suppliers, and customers (see Figure 4-4 for the impact of ERP and the Internet on value systems).

The ERP system has been commonly adopted by the case study manufacturers, while for the B2C case companies, by 2005, both EGame and Dangdang were in the process of adopting or redefining an ERP system.

Integration is a common theme shared by the case companies in terms of managing E-SCM. For example, since 2004, EGame has been keeping on integrating its resources. As a consequence, the company has built up a unified payment platform. TCL1 Electrical uses EIP to realise integration. EIP integrates all the information obtained from previous disconnected functional system such as ERP system, financial system, and HRM system. Hence, employees and dealers can get relevant information with a single registration.

Table 10-5 illustrates the exploitation of OIC by the case companies.

Table 10-5: The management of online informational capability by the case companies

Industries	Case companies	IT infrastructure	Managerial objectives	Achieved benefits
Manufacturing	Haier	ERP and e-business system	1) Data on products; 2) Made-to-order.	Speed and low-cost.
	TCL Electrical	ERP and EIP	The provision of relevant information on need.	1) Speed and low-cost; 2) Enhanced brand image; 3) Enhanced innovation capability.
	Founder	ERP and e-business system	B2B-based collaboration.	1) Speed and low-cost; 2) Enhanced brand image.
	STE	ERP and e-business system	E-SCM and e-collaboration.	Strategic partnership with key customers.
E-commerce	EGame	ERP and e-business system	An integrated operating platform	1) Speed and low-cost; 2) Disintermediation.
	Dangdang	ERP and e-business system	E-SCM and e-collaboration.	1) Speed and low-cost. 2) Enhanced brand image.

Type 5: KMP→CA1: differentiation and CA3: speed

In the housing development industry, Gemdale regards the KMP as the most important e-business application.

Gemdale believed that the improvement of employees' efficiency and capability to be a major source of competitive advantage.

KMP functions as an internal enterprise information portal, which in turn manages three categories of internal activities within the company:

1) The exchange of information, working experience, and opinions on project development;
2) The management of files;
3) The organisation of net-meetings.

KMP is also utilised as a communication channel between Gemdale and architecture design companies.

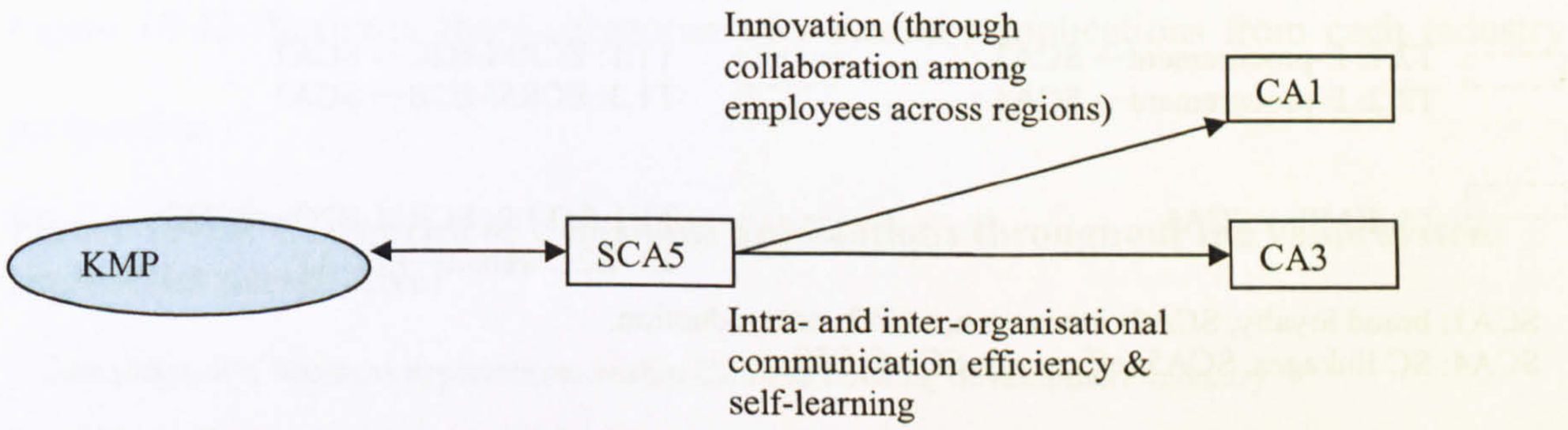
The application of KMP has improved employees' efficiency. This is due mainly to shared experiences and the convenience of online self-education. The application of KMP has also improved the quality of information management and facilitated product

innovation due to the convenience of communication and collaboration.

Drawing on Gottschalk (2007)'s categorisation, three types of knowledge transfers have been exploited within Gemdale: (1) Knowledge transfers between individuals; (2) Knowledge transfers from competence (human capital) to internal structure; (3) Knowledge transfers from internal structure to individual competence.

In summary, the KMP has been used mainly for intra-organizational knowledge management within Gemdale although it also used as a communication channel between Gemdale and architecture design companies (see Figure 10-10).

Figure 10-10: T5 Employing KMP to achieve efficiency and then differentiation and speed



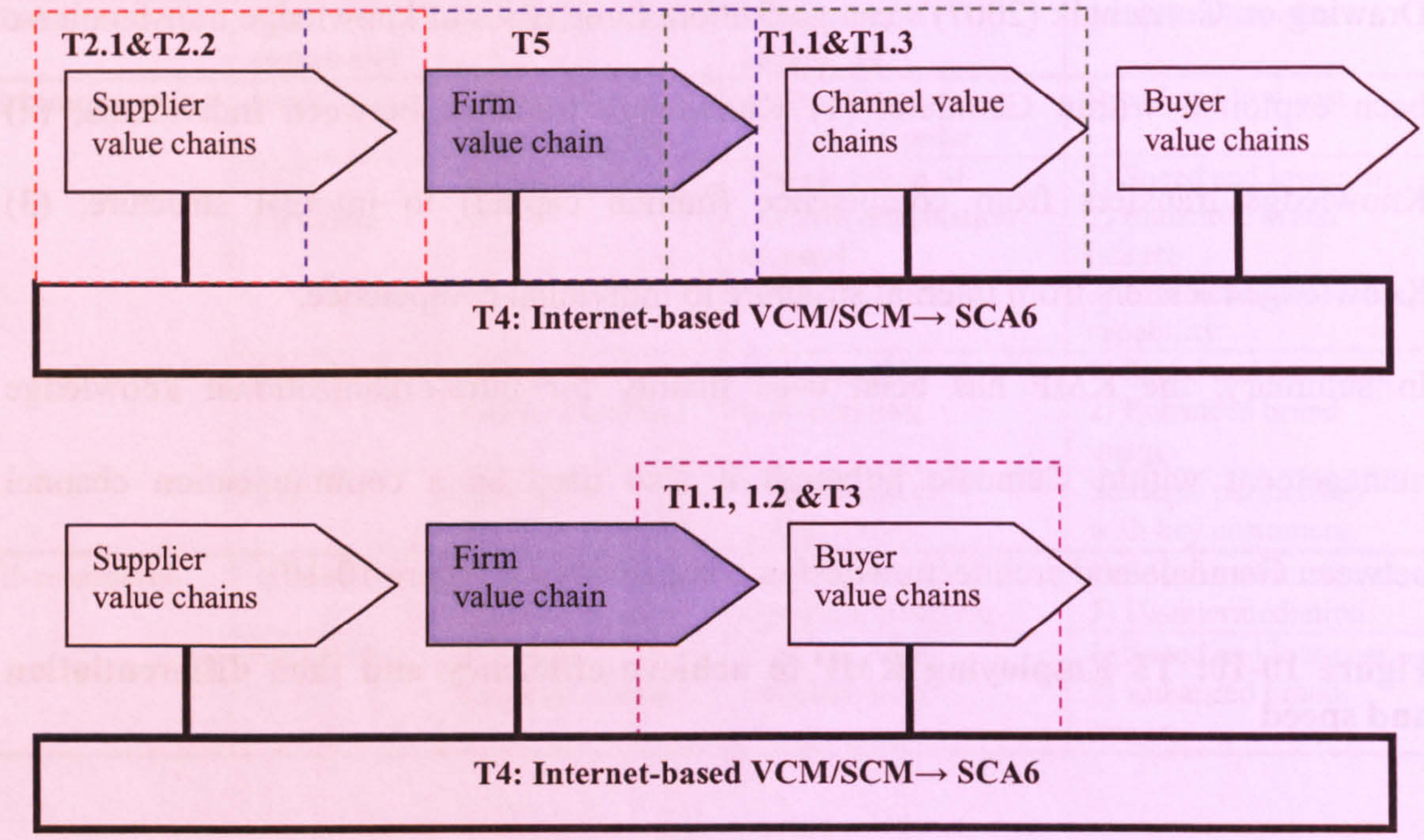
SCA5: efficiency (in communication and employees);
CA1: differentiation; CA3: speed

In the next section, the analysis and comparison of the aforementioned five generic types of e-business applications are presented.

10.3.2 Analysis and comparison of the five generic types of e-business applications

Putting the five types of e-business applications that have been discussed earlier into the context of the value chain framework and the value system allows the relationships and the interaction of these types to become apparent (See Figures 10-11).

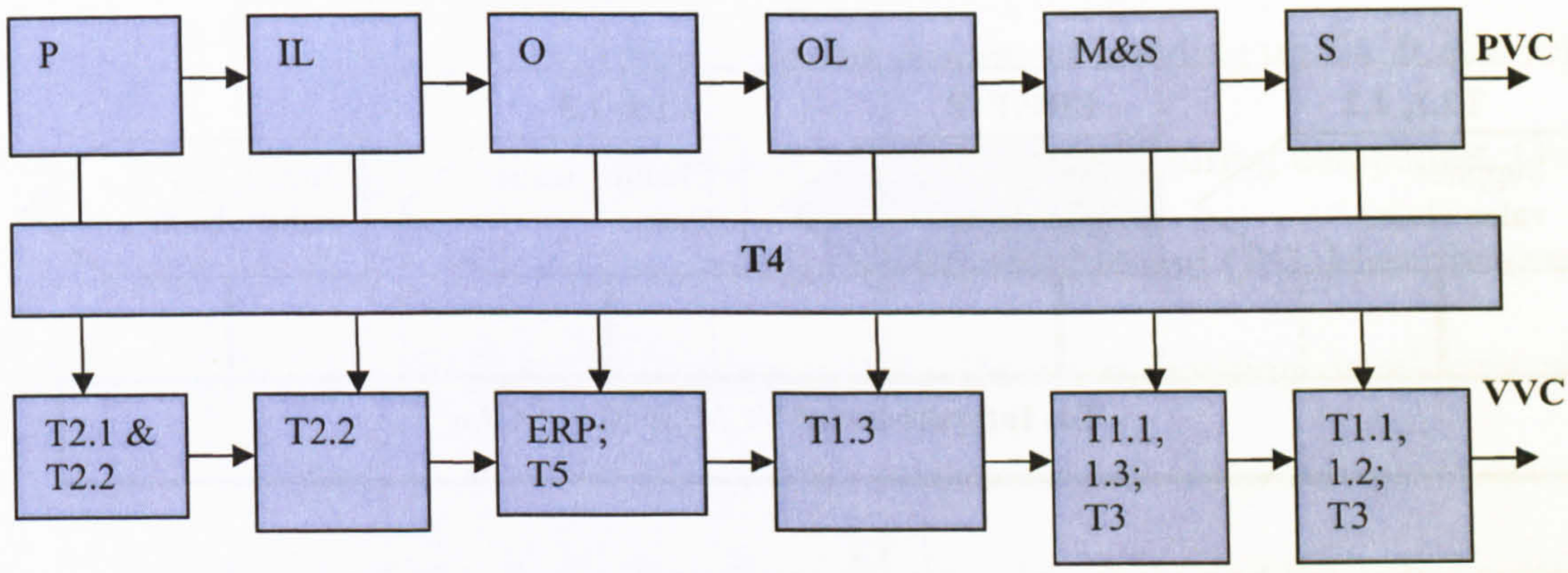
Figure 10-11: Categories of e-business applications throughout the value system



SCA1: brand loyalty, SCA2: innovation, SCA3: cost reduction,
SCA4: SC linkages, SCA5: efficiency, SCA6: OIC

Figure 10-12 illustrates that case companies are in the process of creating a virtual value chain by moving activities from the place to e-space. As a consequence, the management of the physical value chain can be improved.

Figure 10-12: Exploiting the virtual value chain: visibility & mirroring capability



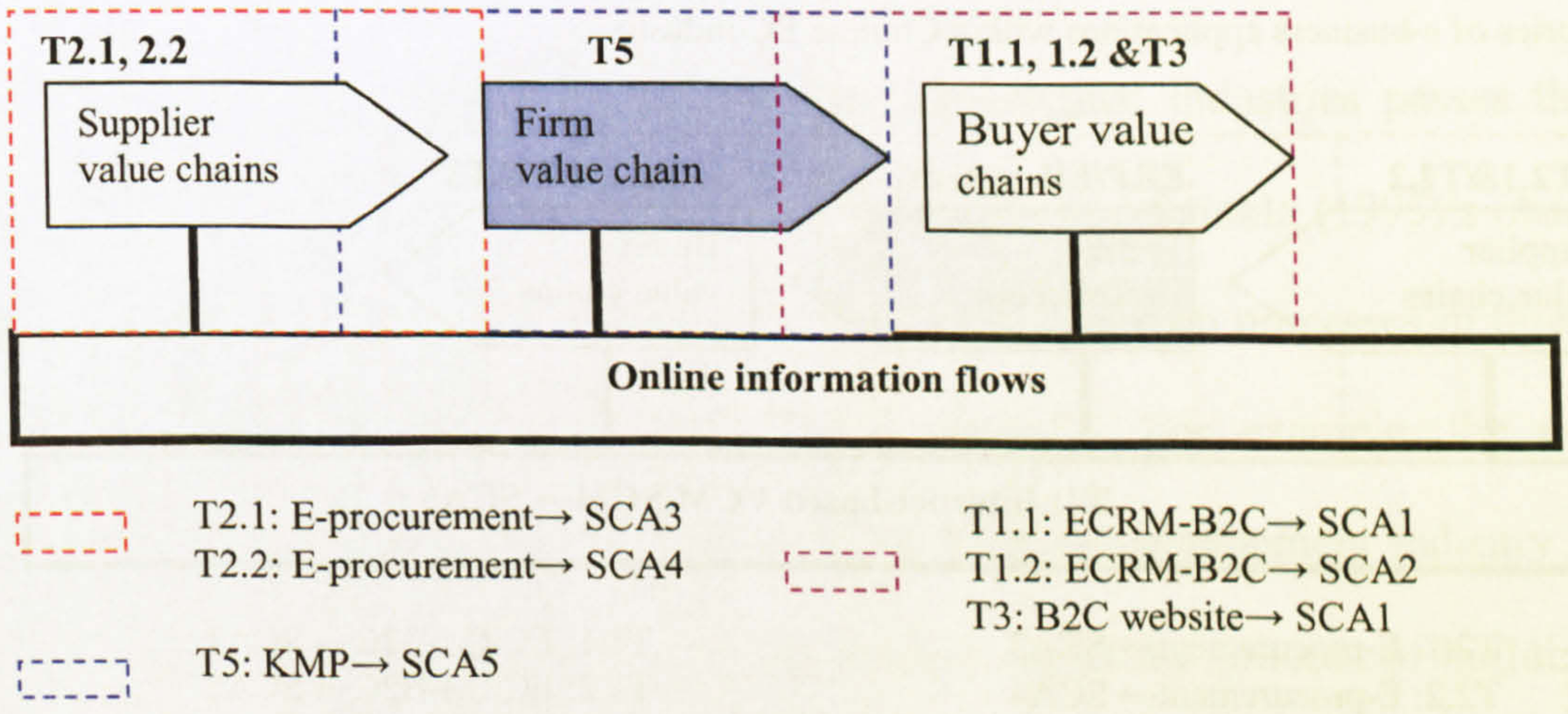
P: Procurement; IL: Inbound Logistics; O: Operations; OL: Outbound Logistics; M&S: marketing & Sales; S: Service
PVC: physic value chain; VVC: virtual value chain

T1.1: ECRM-B2C→ SCA1, T1.2: ECRM-B2C→ SCA2, T1.3: ECRM-B2B→ SCA3,
T2.1: E-procurement→ SCA3, T2.2: E-procurement→ SCA4, T3: B2C website→ SCA1,
T4: Internet-based VCM/SCM→ SCA6, T5: KMP→ SCA5

Figure 10-13 illustrates these categories of e-business applications from each industry perspective.

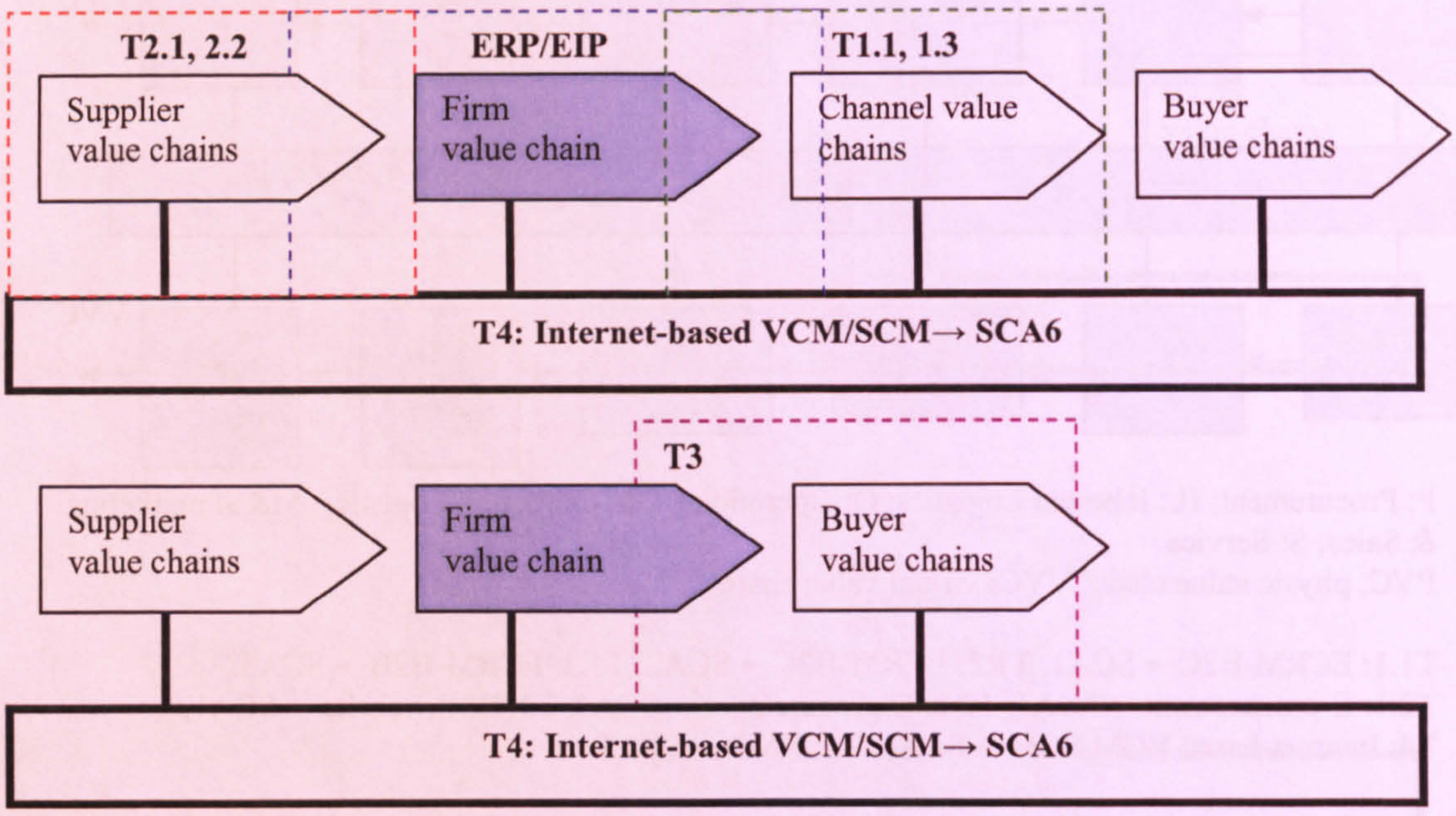
Figure 10-13: Categories of e-business applications throughout the value system (industrial perspective)

Categories of e-business applications within Chinese housing development industry



SCA1: brand loyalty, SCA2: innovation, SCA3: cost reduction,
SCA4: SC linkages, SCA5: efficiency,

Categories of e-business applications within Chinese manufacturing industry



Categories of e-business applications within Chinese EC industry

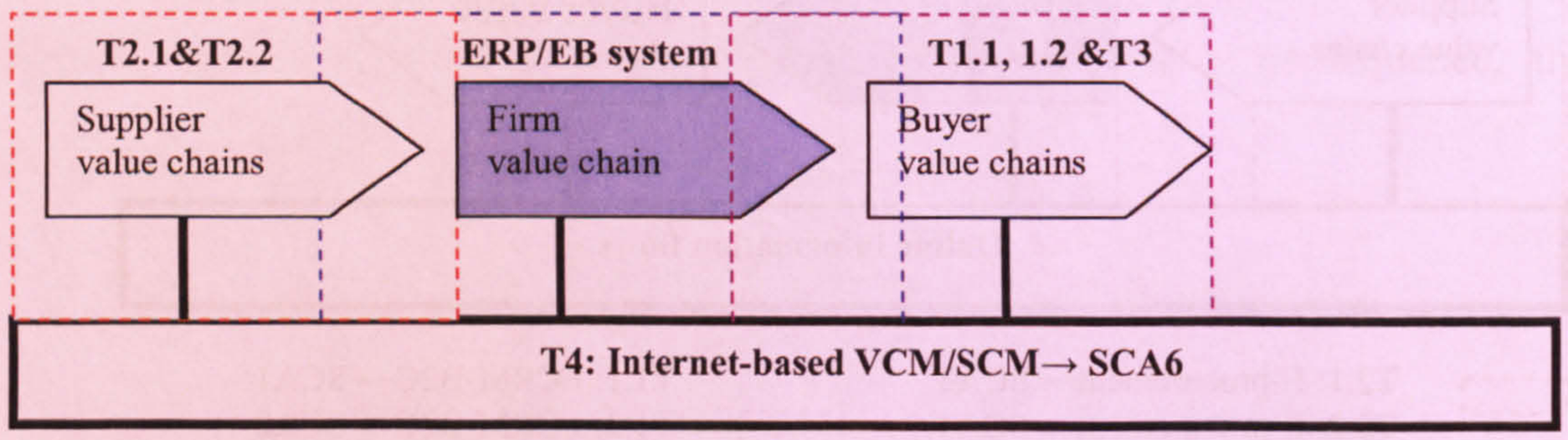


Figure 10-13 illustrates clearly that T1 (E-CRM), T2 (e-procurement), and T3 (B2C website) are the commonly used types of e-business applications across the case industries. T4 (E-SCM) is the common e-business application within both

manufacturing and EC industries. The manufacturing companies have exploited T1.3 (ECRM-B2B) actively because they are in the process of building up T4. It also reflects that channel management is a key success factor for manufacturing companies. Overall, EC companies are doing better in constructing T4: E-SCM and OIC. Manufacturers are in the process of exploiting and building OIC. However, housing developers are far behind in building up this capability.

In summary, the findings suggest that the virtual value chain and the value system are the basic frameworks to identify key categories of value-adding e-business application. Meanwhile, RBV is important for explaining sources of competitive advantage. Drawing from RBV, OIC is a key construct for exploring and explaining e-business value creation.

Therefore, the findings support the necessity of transforming the value chain model to make it more suitable in the e-business context. The research also demonstrates that the virtual value chains, value systems, and RBV are the key constructs for exploring e-business value creation.

In addition, e-business development in the investigated industries passes through a number of stages which are consistent with Rayport and Sviokla (1995)'s observation. They suggest that companies adopt value adding information processes in three stages: visibility, mirroring capability, and "value matrix". For example, the e-business application within the case companies in the housing development industry is in the stages of creating "visibility". These companies are in the process of building online information flow so that they can manage physical information cost-effectively. Moving a step further, most case companies in the manufacturing industry are in the process of building E-SCM as well as moving more activities online. As e-business pioneers, the case companies in the EC industry have gone through the three stages of value creation: visibility, mirroring capability, and "value matrix".

The experience of Internet pioneers illustrated in this research provides valuable

guidance for Internet pragmatists on how to create value from B2C operations. Conversely, Internet pragmatists provide valuable knowledge for Internet pioneers on how to use e-business to manage suppliers and channels.

Overall, the case companies are all doing well in serving Chinese consumers in their respective industries. In the process of exploiting e-business opportunities, first, they have copied Western business models (e.g. the value chain model, made-to-order model, and Dell model). Secondly, some case companies (e.g. Dangdang, EGame and Haier) provide successful examples of how to localize Western models and perform better in China than their Western counterparts. Their experience of using e-business to exploiting competitive advantage will provide valuable experience for both Chinese companies and Western companies who want to seek the huge potential opportunity offered by Chinese domestic market.

10.4 The Challenges of e-business adoption

The key questions proposed by the case companies determine the categories of challenges they encountered. For example, the following questions were asked by the case companies:

1) Should we seek e-business leadership? (by housing developers)

2) How can we apply e-business at higher levels such as at a strategic level? (by manufacturers)

3) How should we manage B2C and use e-business technologies to cope with rapid business growth? (EC companies)

10.4.1 E-business challenges faced by housing developers

Within the housing development industry, senior management needs to consider whether to seek e-business leadership. The complexity of business requirements and the strong influence of government policies lead to a lack of consensus among senior management with regard to the necessity and significance of e-business adoption. As a result, standardization and integration are difficult to achieve.

The difficulty in 'standardisation' derives from different aspects, e.g. the disparity of the levels of property development across regions, the lack of collaboration among functional departments, legacy systems, and the repetition of system adoptions.

Despite the difficulty in standardization and integration, Vantone-Ehouse, who is the first-mover of B2C application in the housing development industry, mentioned customer acceptance as a main constraint.

10.4.2 E-business challenges faced by manufacturing companies

For the case manufacturers, the corporate governance/administration system is a fundamental obstruction in terms of applying e-business at a strategic level (more details are illustrated in the Figure 8-6).

At the business operating level, four subcategories of obstructions have been encountered by the case companies: a) B2C operation: e-fulfilment and customer acceptance (Haier); (b) E-VCM: building up trust and collaboration relationships with business partners (TCL Electrical, Founder); (c) system integration (STE); (d) restructuring business process. (More details are illustrated in the Figure8-6)

In the B2C domain, B2C readiness is the key challenge. The factors mentioned include: (a) customer acceptance; (b) supplier readiness; (c) supporting system readiness such as distribution and payment methods.

10.4.3 E-business challenges faced by EC-lead companies

System integration is a challenge to EGame. The main difficulty is to find a balance between high speed growth and sustainable development. There is conflict between the speed of product to market and resource integration requirements. For instance, to develop a new game, the technical team may face a dilemma of choosing the new system-in-building or previous systems because the former may take one or two extra years. Alternatively, to guarantee the product goes to markets quickly, EGame has to develop another independent system to operate the product.

In summary, information integration is the common challenge encountered by case companies in the three industries investigated. How to use a CRM system to manage end users is a common challenge shared by the case companies in the housing development and EC industries. Customer acceptance appears to be the key factor that

decides whether to adopt B2C and the success of B2C application.

Table 10-6: The challenges of e-business adoption

Industries	Housing developers	Manufacturers	EC companies
Key management questions	Whether to seek e-business leadership?	How to use e-business at strategic level?	How to manage B2C and business growth?
Key challenges of e-business adoption	The lack of consensus among senior management with regard to the necessity and significance of e-business adoption.	Corporate governance/administration system.	B2C readiness.
Sub-categories of challenges	1) The difficulty of standardization and integration; 2) B2C: customer acceptance.	1) B2C operation: e-fulfillment and customer acceptance; 2) E-VCM: building up trust and collaboration relationships with business partners; 3) System integration; 4) Re-structuring business process.	1) B2C readiness: (a) customer acceptance; (b) supplier-readiness; (c) supporting system readiness such as distribution and payment methods; 2) How to better use CRM system? 3) System integration.

10.5 The impacts of e-business applications

The evaluation of e-business applications

One commonality shared by all the case companies is that there is no overall evaluation of e-business investment or performance. According to the case companies in the manufacturing industry, the process of assessment is complicated, resource- and time-consuming, and regarded as not necessary because most large enterprises in the industry need to apply e-business. The interviewees explained that the difficulty in calculating the value from quantitative perspective is the main reason of not carrying out overall e-business evaluation.

Another commonality is that they had an evaluation system for each individual IT project. For example, the indicator adopted by Haier measures the changes brought about by the IT adoption, such as the changes of product life cycle, cash flow cycle, as well as product quality. The indicators adopted by TCL Electrical include user feedbacks and the extent of achieving the aims that were proposed before launching the project, as well as the senior management's comments. In 2003, to evaluate the impact of its knowledge management platform, Gemdale administered a questionnaire to its employees.

The competitive advantages of the case companies

Table 10-8 summarises the competitive advantage that have been commonly stated by the case companies in each industry.

Table 10-7: The competitive advantage of the case companies

Industries	Housing developers	Manufacturers	EC companies
Sources of competitive advantage	Operational efficiency (through managing organizational structure, corporate governance, and software applications); Marketing capability; Customer service; Other key value sources: leaders' vision, governance structure, KM, local government support, & made-to-order model.	Brand loyalty (through product quality and customer service); Channel management. Other key value sources: globalization, low-cost, innovation, & R&D capability.	Corporate governance & culture; CRM; Operational efficiency.

E-business' impact on competitive advantages

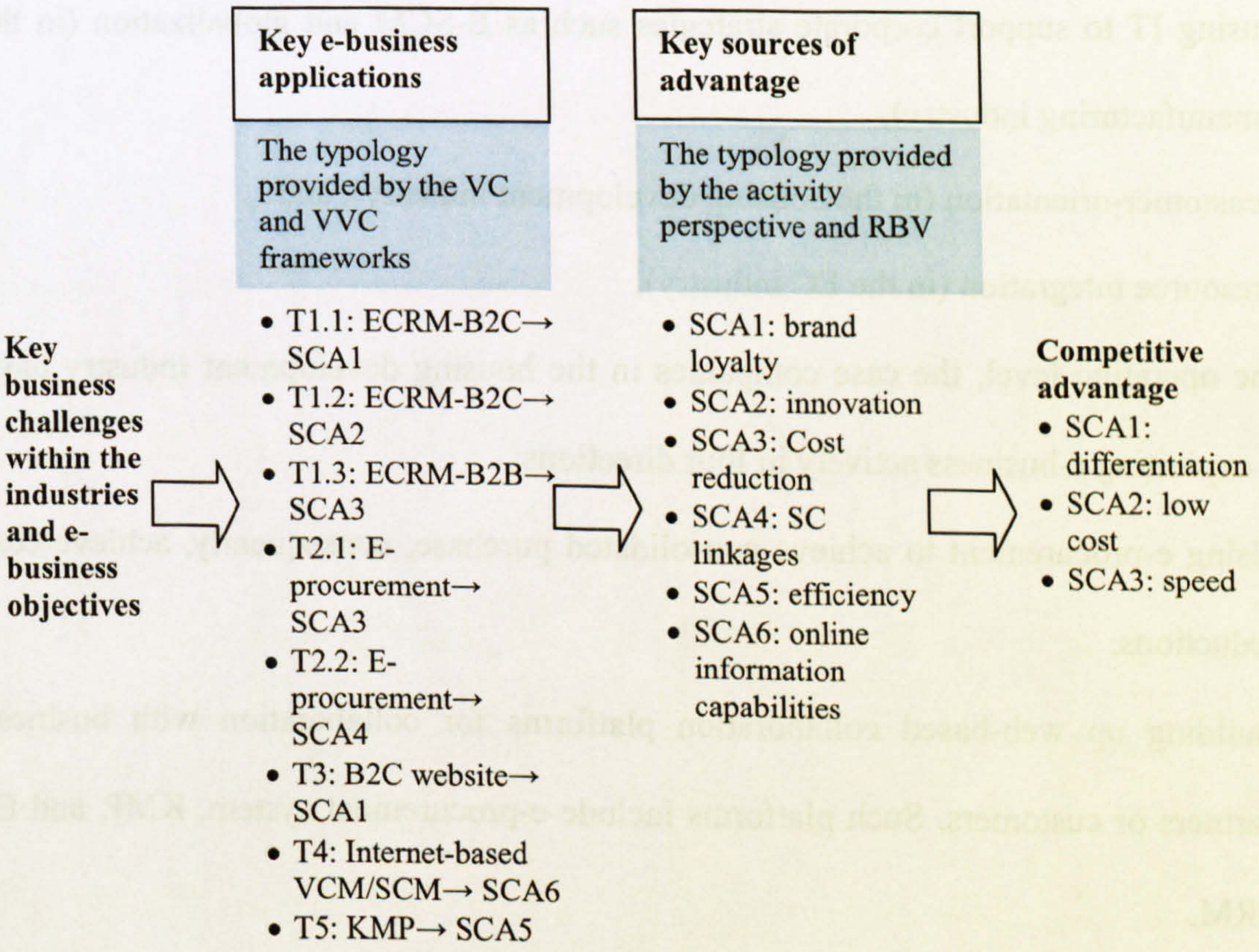
Integrating Table 10-7 with Table 10-4, we can see the contribution of e-business on these companies' competitive advantage (see Table 10-8).

Table 10-8: E-business' impacts on the key sources of competitive advantage

Industries	Sources of competitive advantage	Relevant e-business applications
Housing development	Operational efficiency (SCA4, SCA5); Customer service (SCA1); KM/Employees' competence (SCA5).	T1.1, T2, T5.
Manufacturing	Brand loyalty (SCA1); Innovation, R&D capability/ (SCA2) Low-cost/Cost reduction (SCA3); Channel management/ SC linkages (coordination)(SCA4); Online information capability (SCA6).	T1, T2, T3, T4.
E-commerce	CRM/Brand loyalty (S-CA1) Operational efficiency/Cost reduction (SCA3); Operational efficiency/Online information capability (SCA6).	T1, T2, T3, T4.

Drawing on the empirical analysis, Figure 10-14 summarises the key types of e-business value creation.

Figure 10-14: The theoretical framework for investigating e-business value creation



10.6 The e-business strategies

For the case companies in both the housing development industry and the manufacturing Industry, 'IT plan' is a more appropriate term than 'e-business strategy' because it is a better depiction of "*the fast changing feature of the IT technologies and the competitive environment* (TCL1, visit2)". Similarly, Vanke5 commented: "*We had IT plans rather than strategies. These plans were not explicitly integrated with our corporate strategy and organisational structure.* (Vanke5, Visit4)" The use of 'IT plan' not only reflects that e-business has not been used at strategic level in these industries; but also underlines that Chinese companies are implementing automation and informatization and e-business at the same time.

The case companies followed a common principle for creating an e-business plan: consider business processes or advanced management concepts first, then apply appropriate information systems.

The overall objectives of e-business strategy differ from industry to industry:

- using IT to support corporate strategies such as E-SCM and globalization (in the manufacturing industry),
- customer-orientation (in the housing development industry), and
- resource integration (in the EC industry).

At the operating level, the case companies in the housing development industry have been exploiting e-business actively in four directions:

1) Using e-procurement to achieve consolidated purchase, consequently, achieve cost reductions.
2) Building up web-based collaboration platforms for collaboration with business partners or customers. Such platforms include e-procurement system, KMP, and E-CRM.
3) Using E-CRM to achieve the concept of customer-orientation.

4) Building up a central integration system which would guarantee smooth information flow.

The case companies in the manufacturing industry and EC industry focus on creating OIC throughout the value system so that the management concept of E-SCM can be achieved.

Continuous innovation in e-business technologies is the common tactic adopted by the case companies in the EC industry.

Drawing on the findings from the within industry case analysis and cross industry case comparisons, the next chapter will present the conclusions and outline directions for future research.

CHAPTER 11 CONCLUSIONS AND FUTURE WORK

11.1 Introduction

The purpose of this final chapter is to present the conclusions from the research and to establish the contribution and implications. It also explores the limitations of the research and outlines directions for future research.

11.2 Key research findings and the analysis

The literature review revealed some research gaps. Most notably, that few theoretical frameworks have been proposed to capture e-business enabled value creation through an integrated approach, which includes the environmental view and RBV. Furthermore, little empirical research has been conducted to test this kind of framework. This thesis focused on addressing these gaps.

This research has investigated e-business enabled value creation within two distinct groups: dotcoms/Internet pioneers and established companies/Internet pragmatists. Many researchers suggest that dotcoms and established companies are facing different strategic imperatives (e.g. Porter, 2001) and require different competencies (e.g. Fahy and Hooley, 2002). However, little empirical research has been conducted to explain the details of the differences. This research has begun to provide this empirical evidence. In addition, this study presented an industry perspective on e-business enabled value creation.

Research (e.g. Chen et al., 2007, Guo and Chen, 2005, Martinsons, 2002) suggests that Chinese companies use IT differently from their Western counterparts and Western models face some unique challenges in China because of a lack of e-business readiness and the socialist market system. However, little empirical research investigates how Chinese companies localise Western e-business models. This research examined this

process.

The literature review also identified several key constructs of the theoretical basis for investigating e-business' impact on competitive advantage: the VC concept, the VVC framework and the RBV. Based on this finding, a conceptual framework was developed. This framework was used to guide the research process. Meanwhile, based on the findings from empirical evidence, this framework was updated and better defined. The distinctive progress was on the identification of the typologies of key e-business applications and e-business enabled SCA as well as online information capabilities as a basic construct for VVC.

In this research, a qualitative multiple case study approach was used to accomplish various aims: to provide description, test theory and generate theory (Eisenhardt, 1989). This study was based on multiple cases and evidence in order to achieve construct validity and analytical generalization. Replication logic in multiple-case studies was used in order to achieve external validity. Pattern matching and explanation-building was followed to allow internal validity. A case study protocol, key research questions, and the theoretical framework were followed during analysis to allow reliability (Riege, 2003, Yin, 1994).

In order to address the identified research gaps, this research served to answer several key research questions and to accomplish several research objectives. First, how have Chinese companies created competitive advantage using e-business? In order to address this question, four research objectives were set:

(1) to identify the key aspects of e-business mentioned by the Chinese companies;

(2) to identify the key motivations of e-business adoption by the Chinese companies;

(3) to propose a framework to categorize the key value-adding e-business applications adopted by the Chinese companies;

(4) to investigate the relationship between key e-business applications and SCA.

Secondly, how have Chinese companies developed or adapted e-business strategies?

Two research objectives were set to tackle this question: (1) to provide a framework to adopt an e-business strategy to gain competitive advantage; (2) to identify the key changes that need to be managed in order to cope with e-business implementation.

Thirdly, are there differences between firms in the same sector in the use of e-business? Are there differences between sectors in the use of e-business? These questions provided an industrial perspective on e-business enabled value creation. Meanwhile, they explained the differences in e-business value creation between Internet pioneers and Internet pragmatists and among industries.

Fourthly, does Porter's VC provide a framework to capture such differences and guide companies in the use of e-business to gain competitive advantage? To address this question, the research provides a progress on the use of the VC model in an e-business context.

This thesis has investigated and given detailed insights into Chinese companies' e-business-enable value creation in three industries, namely manufacturing, housing development, and e-commerce. The principle finding is the formulation of a theoretical framework, which integrates the key constructs of the VVC model, OIC, value system, and RBV for the purpose of systematically capturing the generic types of e-business value creation. A typology of five generic types of key e-business applications has been proposed that states clearly the relationships between key e-business applications and SCA.

The e-business concept in the Chinese business context has been defined. The key motivations of e-business adoption by the Chinese companies have been identified and categorized.

This research also identifies the differences between sectors as well as in the same sector in the use of e-business. At the same time, the commonalities between sectors as well as in the same sector in the use of e-business have been identified. Based on the aforementioned findings, suggestions of the key changes that need to be managed in

order to cope with e-business implementation and promising e-business development directions of each of the sector are given.

The details of these findings are presented as follows.

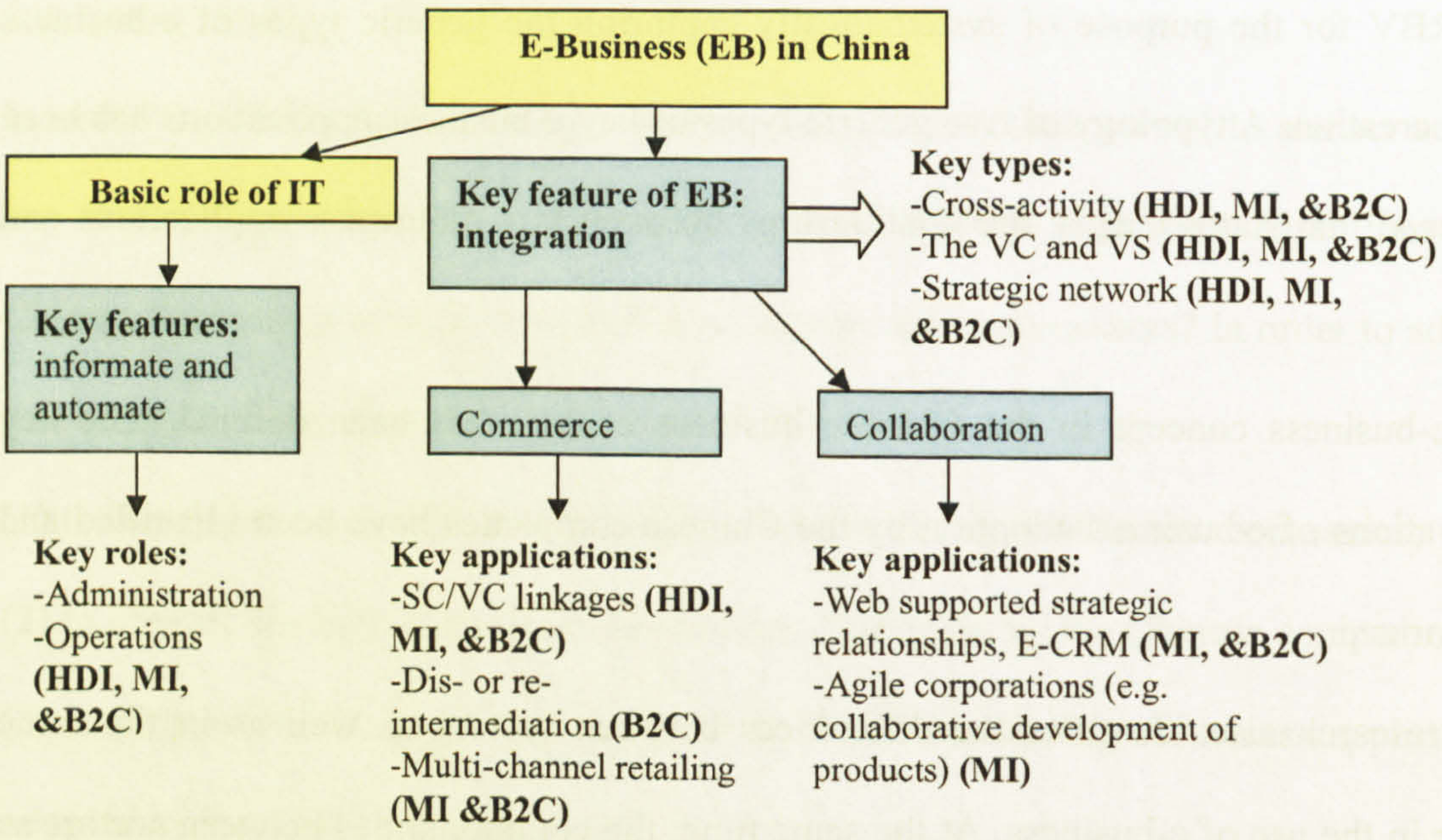
11.2.1 Research question one: how have Chinese companies created competitive advantage by using e-business?

Research objective 1: to identify the key aspects of the e-business concept in the Chinese business context

Research objective 2: to identify the key motivations of e-business adoption in the Chinese business context

This research identifies that the case companies (in particular Internet pragmatists) commonly use the terminology "management information system" rather than "e-business". This is mainly based on the specific feature of e-business application in China—approaching automation, informatization and e-business at the same time. Hence, drawing from Figure 3-1, we can define the key aspects of the e-business concept in China with an industrial perspective.

Figure 11-1: The distinct features of e-business in China-an industrial perspective



HDI: housing development industry, MI: manufacturing industry, B2C: B2C oriented industry (Dotcoms).

This research finds the key difference between Internet pioneers (Dotcoms) and Internet

pragmatists (housing developers and manufacturers): their attitudes towards B2C applications. The B2C readiness mainly contributes to this difference. Internet pragmatists thought that consumers were not ready for the B2C channel. Hence, they regarded the B2C channel as non-profitable and non-pragmatic. By the time of this investigation, only Haier actively explored the e-shop model for the purpose of seeking first-mover advantages. This attitude has changed in recent years, in particular among manufacturers, accompanying the rapid improvement in the B2C readiness in China. As a consequence, Internet pragmatists are exploring B2C channels either through in-house development or outsourcing to third-part market-spaces.

The Internet pioneers regarded the B2C channel as a competitive weapon for them to reshape industrial structure (e.g. retailing) and create new industry (e.g. online gaming). They adopted Western models first, and then adapted them into the Chinese business context in order to cope with the lack of B2C readiness. For example, Dangdang adopted the innovative methods of customer e-fulfilment i.e. cash-on-delivery and partnerships with established book stores and couriers. By building a trust relationship with customers first through these methods, Dangdang can then attract more customers to pay online or buy higher value products.

Meanwhile, in terms of the use of B2C, Internet pioneers and pragmatists have different focuses. Internet pioneers focus on effectiveness—its performance on the market and its customers (e.g. integrating with e-CRM); while Internet pragmatists (mainly among manufacturers) regard B2C as part of its brand strategy and an experiment.

This research also reveals different understanding of the e-business concept among industries (Presented in Table 10-2). The research finds that the case companies in each of the industries share commonalities in terms of their attitudes towards e-business applications. However, across industries the differences are apparent.

Apart from the B2C readiness, the different focus of the corporate strategies explains this difference. As discussed in Chapter 10, e-business has been developed in order to

support some common corporate strategies and objectives which include: (1) expansion strategy, (2) the improvement of operational efficiency, (3) globalisation, and (4) innovation. Based on different business focus, case companies have different understanding of the e-business concept among industries:

- E-operation and collaboration with business partners are the core features of e-business within housing development companies (to support expansion strategy and operational efficiency).
- E-operation, collaboration with business partners, and OIC are the core features of e-business within manufacturing companies (to support expansion and globalisation strategy, operational efficiency, and innovation).
- E-operation, collaboration with business partners, B2C, and OIC are the core features of e-business within EC-oriented companies (to support expansion and globalisation strategy, operational efficiency, and innovation).

Differences also exist between industries in B2B application. The dividing line is whether to take a proactive e-business approach. The manufacturers and EC companies have adopted a proactive approach while the housing developers would like to take a 'wait-and-see' attitude.

The differences of attitudes to e-business lead to the differences between industries in terms of the focus of e-business applications (i.e. the focus changes from e-operation to e-SCM, and to gaining sources of competitive advantage, details see Figure 10-1). For manufacturing companies and EC-oriented companies, e-business is a tool for solving key management challenges while most housing developers use e-business as experiments to improve operational efficiency.

Research objective 3: to propose a framework to categorize the key value adding e-business applications adopted by the Chinese companies

Research objective 4: to investigate the relationship between key e-business applications and SCA

Based on the integration of the RBV and VC concept, this research has found e-business applications can potentially lead to six categories of SCA: brand loyalty (SCA1), innovation (SCA2), cost reduction (SCA3), supply chain linkages (SCA4), efficiency (SCA5), and online information capabilities (SCA6) (see Table 10-4 and Figure 10-14). Moreover, this research has identified a typology of five types of key e-business applications based on their contribution to the proposed SCA (see Figure 10-14 and Table 11-1). The running order is based on the commonality and the importance of the applications identified from the case companies.

Table 11-1: Five types of key e-business applications

Types (T)	Key e-business applications	Sources of competitive advantage (SCA)	Competitive advantage (CA)
T1	E-CRM (B2C); E-CRM (B2B).	SCA1:brand loyalty; SCA2:innovation; SCA4: SC linkages.	CA1: differentiation; CA3: speed.
T2	E-procurement; E-procurement (supplier inventory management system).	SCA3:cost reduction; SCA4: SC linkages.	CA2: low-cost advantage; CA1 &CA3.
T3	B2C website	SCA1	CA1
T4	E-VCM/SCM	SCA6: online information capabilities.	CA1, CA2 &CA3
T5	KMP (only cited by the housing development companies)	SCA5: efficiency (in communication and employees)	CA1 &CA3

Type one (exploiting e-CRM to achieve brand loyalty). Our findings reveal that the customer-centric strategy is commonly adopted by the case companies across industries in order to improve their profit margins. As a consequence, e-CRM is a primary e-business application. The research also reveals that the case companies' main objective for using e-CRM is to build and enhance brand loyalty, which can lead to differentiation advantage.

This research confirms e-CRM's main functionalities: sales force automation, data

warehousing, data mining, decision support, and reporting tools (Katz, 2002, Suresh, 2004). In addition, as illustrated in Figure 10-6, we have proposed a typology of three basic types of e-CRM applications. The housing developers and B2C companies have exploited e-CRM (B2C) to achieve customer-led R&D innovation or brand loyalty while the manufacturers have used e-CRM (B2B) to obtain SC linkages. This research has also found that managing online communities is a key source for enhancing customer loyalty and facilitating innovation in terms of e-CRM (B2C). The most prominent example of this is EGame. In 2002, EGame invested several million RMB in building up an online user portal. Through this portal, disintermediation can be achieved, which lead to significant save in operation as well as improvement of customer experience. In 2004, EGame expanded into online literature business. In 2008, EGame's online literature website (EGame Literature), which took over the most famous Chinese literature websites, captured 80% of the market share in Chinese original stories in internet publishing. EGame Literature's business model is to source online literary works from users writing online and to share potential revenue between EGame Literature and the authors. EGame Literature charges users to read the literature available on its online literature portals. Meanwhile, EGame plans to use the original literature as a source of creative content for its online games.

Another good example is Vanke's online community. In recent years, Vanke has steadily adapted its online community to better suit Chinese consumers' tastes. For example, Vanke's online community currently provide the option of 'group buy', which is a popular shopping mode preferred by Chinese consumers. Individual consumers can get big discounts by ordering a product in a group. Vanke performs as an organiser of 'group buy' e.g. providing product information and information on how many persons are still needed in order to facilitate a group purchase, collecting money from individuals in advance and refunding the money if the intended group purchase fails. Vanke can make profits from its online community because some famous brands such as

Haier have put their links on to the website.

This study reveals that two types of e-channel linkages (ECRM-B2B) have been explored by the manufacturers (shown in Figure 10-5): (1) online information flow supports collaborative decisions between the case companies and their distributors. As a consequence, manufacturers have obtained great flexibility and responsiveness to changes in demand and achieved faster time-to-market. (2) Online information capability also provides better support for dealers and makes contribution to the improvement of dealers' operational efficiency.

This study also identifies the reasons that explained the success or failure of a dealer's inventory management system (DIMS): the sales model and the power relationship. TCL-Electrical failed to implement its DIMS because it adopted a sales model of non-exclusive dealers. Founder and Haier have succeeded in implementing the DIMS because they have adopted exclusive outlets (or dealers) and have strong bargaining power over dealers.

Type two, achieving cost reduction through applying e-procurement, is a common practice adopted by the case companies since having competitive costs becomes important. This research reveals two types of e-procurement (see Figure 10-7): (1) (T2.1) achieving cost reduction through consolidated purchase and efficient supportive information. (2) (T2.2) Obtaining SC linkages through strategic partnerships and collaborative platforms.

Type one (T2.1) e-procurement is applied across industries while type two (T2.2) is gaining increasing importance. Haier is the best example of exploiting both T2.1 and T2.2. Haier has used e-procurement systems to achieve consolidated purchase, and consequently, significant cost savings. Haier has also exploited strategic partnerships with suppliers for achieving cost reduction first and then innovation in product design. As a consequence, Haier has achieved competitive advantage in both low-cost and differentiation. In order to address the fierce competition in the market, Haier has

moved its strategy to pursue differentiation strategy. Cooperating with suppliers to provide premium products is a key approach to differentiation.

This research also identifies key management intervention that is needed for e-procurement: supplier network-optimisation. The objectives of the process are to search for the best suppliers at global scale and/or strengthen partnership relationships with suppliers.

Type three, improving brand loyalty through applying B2C websites, is another commonly adopted e-business application. The case companies both in the housing development and manufacturing industries have explored the B2C application as an experiment. Their objectives are as follows: improving brand loyalty, contribution to offline sales, attracting new customers, and learning B2C experience. For the housing developers, B2C websites are basically served as an online brochure without online transaction facilities. The manufacturers have adopted the e-shop model, which sells their own products to the end consumer as a complementary channel. Accompanying the improvement of B2C readiness in China, manufacturers are increasingly active in this application.

The EC companies have explored B2C application to realise interaction, personalisation, and customer-oriented R&D innovation. The B2C websites are their main sales channel and marketing channel. They are actively building up their online capabilities and offline resources such as logistic centres, delivery partners or internal delivery teams.

Type four, obtaining online information capabilities (OIC) through integrating ERP or/and e-business systems with corporate resources, is a key source of competitive advantage (SCA) shared by the case companies in the manufacturing and EC industries. The case companies in the housing development industry also aim to build up this capability. This research identifies three functionalities of OIC (illustrated in Figure 10-9): innovation and brand loyalty, collaboration, and disintermediation (explored by Dotcoms only). The findings also reveal the key success factors of building up OIC:

trust-building, information modification, dynamic IT infrastructure, and information integration.

For the manufacturers, the objective of building up OIC is to achieve supply chain visibility and realise e-SCM/VCM. Typically, by exploiting e-VCM, the case companies can achieve enhanced efficiency and collaboration as well as innovation and brand loyalty. OIC enable companies to better manage value chain linkages. As a consequence, companies can keep flexibility, be responsive to changes in demand, and achieve speed-to-market.

Haier's success can be explained by its OIC. By exploiting OIC, Haier has built strategic partnerships with both suppliers and sales channels. As a consequence, Haier has basically realised a made-to-order model, zero-stock strategy and operated as a value system organiser. Based on OIC, Haier can integrate E-SCM, ERP, E-CRM, and B2C. Consequently, Haier has made great improvements in speed, product and service quality (Haier, 2009, Haier, 2010a). Haier's strategy for the next ten years is to utilise e-business so that they can integrate global resources (Zhang, 2011). To achieve this strategy, OIC is a basic construct.

Within the case companies in EC industry, OIC are the foundation of other e-business applications such as disintermediation and personalised marketing. Hence, these companies are continuously building up their e-business infrastructures. They regarded this process as an approach to gain competitive advantage. EGame is the best example of this. EGame has been continuously building up and improving its online user portal and regards it as its key SCA.

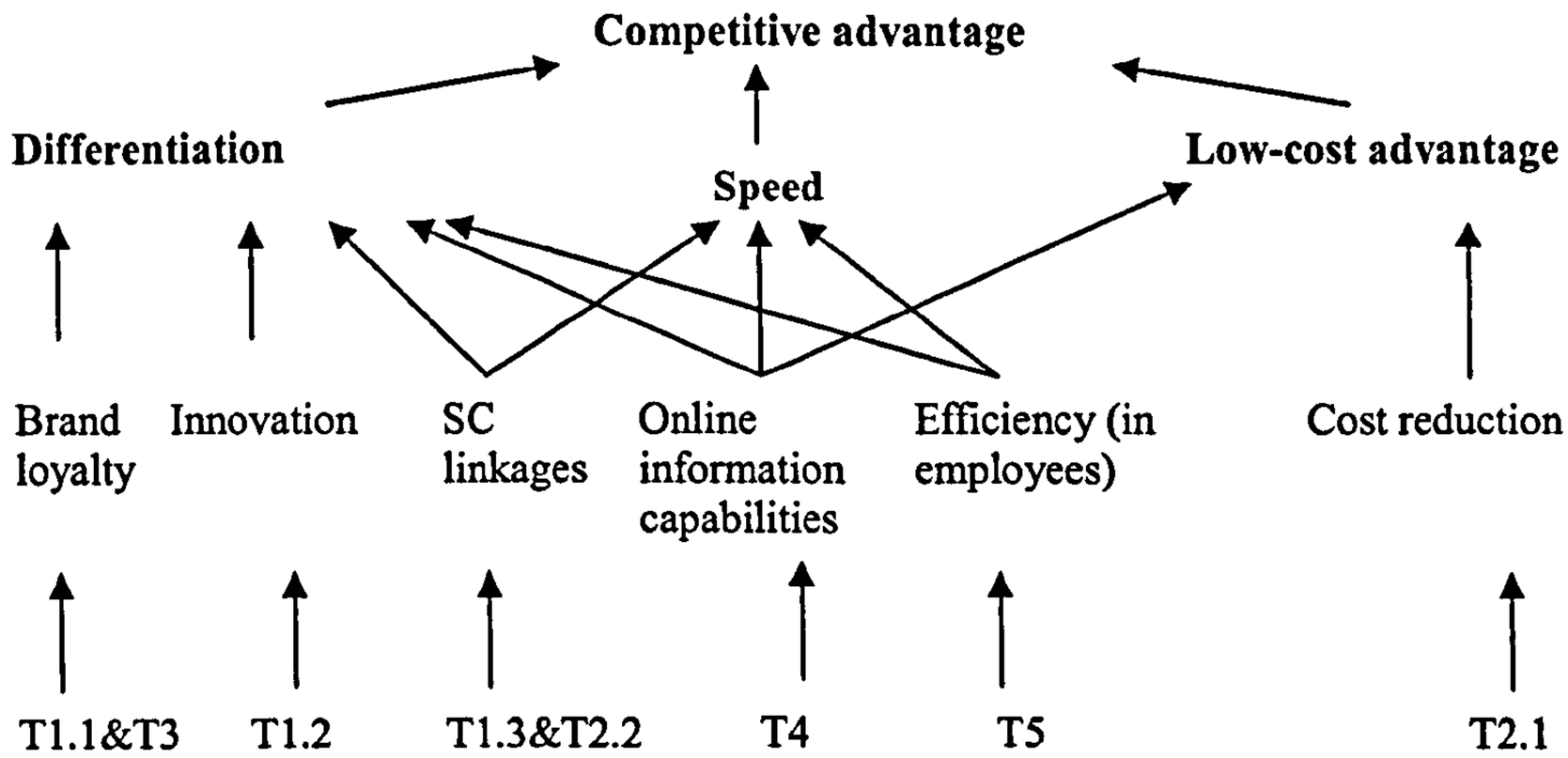
Type five, improving employees' competence through applying knowledge management platform (KMP), is regarded as the most important e-business application in Gemdale, a housing development company. Gemdale believes that the improvement of employees' efficiency and capability to be the major SCA. KMP functions as an internal enterprise information portal and a collaborative platform between the company and its business

partners i.e. design companies. Since 2009, Gemdale has developed KMP as a R&D platform which facilitates standardisation and efficiency in product design and copying of best experience across regions, and as a result Gemdale can improve product quality and achieve standardised quality across regions (Gemdale, 2010).

Figure 11-2 illustrates the relationships among types of e-business applications, sources of competitive advantage (SCA), and competitive advantage (CA). The Figure clearly illustrates that e-business has been exploited more often to achieve differentiation than to achieve low-cost advantage. This finding supports Porter's (2001) argument that e-business is a powerful tool for achieving or strengthening a distinct strategic positioning. Moreover, as the figure shows, besides the two basic types of CA proposed by Porter (1985), speed emerges as a basic type of CA. Speed, referring to rapid response to consumer demand, new products and technologies, gains greater importance in competition due to changes brought by globalisation and e-business (Sapkauskiene and Leitoniene, 2010).

Figure 11-2 also clearly illustrates that five categories of key sources of competitive advantage, namely brand loyalty, innovation, SC linkages, OIC, and efficiency in employees, can potentially lead to differentiation advantage. E-procurement was commonly adopted by the Internet pragmatists as a first step to e-business applications and an approach to cost reduction, and through obtaining OIC, companies can potentially achieve all three types of competitive advantage.

Figure 11-2: The relationships among types of e-business applications, key source of competitive advantage, and competitive advantage



T1.1: exploiting e-CRM (B2C) to achieve brand loyalty; T1.2: achieving innovation through e-CRM (B2C); T1.3: improving SC linkages through applying e-CRM (B2B); T2.1: achieving cost reduction through applying e-procurement; T2.2: improving SC linkages through applying e-procurement; T3: improving brand loyalty through applying B2C website; T4: obtaining online information capabilities through applying ERP or/and e-business systems; T5: improving employees' efficiency through knowledge management platform.

11.2.2 Research question two: how have Chinese companies developed or adapted e-business strategies?

Research objective 5: to propose a framework to adopt an e-business strategy to gain competitive advantage

Research objective 6: to identify the key management intervenes in the e-business management

This research has demonstrated that Internet pioneers and Internet pragmatists have adopted different e-business strategies. The Internet pragmatists applied e-business to solve business challenges (e.g. improving innovation capability and operational efficiency) and adopt advanced management concepts (e.g. the made-to-order model and the customer-centric concept). The Internet pioneers used e-business as an innovative tool and a competitive weapon to reshape industrial structure. This finding supports Porter (2001) and Fahy and Hooley (2002)'s argument that dotcoms and established companies are facing different strategic imperatives and they should adopt different e-business strategies. Moreover, this research provides empirical evidence to

explain these differences in the Chinese business context.

Meanwhile, in order to fully explore e-business enabled value creation, the Internet pioneers and pragmatists share a common objective—to create OIC. This view could be regarded as a development of the view of creating a hybrid value chain (integrating of both physical and virtual value chain) (e.g. Porter, 2001, Rayport and Sviokla, 1995).

In order to propose e-business strategies, both Internet pioneers and Internet pragmatists face a same strategic choice (in particular in the B2C application): to be or not to be a first-mover?

Both of our case companies in the B2C sector (dotcoms, Internet pioneers) chose to be first-movers in their respective sector. They have both become leading players in their sectors and leading players in the Chinese B2C market. They are now reaping the rewards of early entry. However, they are not the best players in their markets. The best players entered the market a few years later but with right timing and better offering such as right products, better logistics and better customer services. Table 11-2 presents the first-movers advantages and disadvantages in terms of B2C operation in China.

Table 11-2: Chinese B2C sector: first-mover advantages and followers' advantages

Industries	First-mover advantages	First movers disadvantages/Followers' advantages
B2C-retailing Dangdang (Entered the market in 1999, became e-retailer in 2005; top 4 market player in 2010 with 8.3% value share (EI, January 2011))	Pioneer the low-cost delivery and channel management; Relatively low-cost of building brand identity and loyalty.	High cost of educating end consumers to accept online purchase; Due to a lack of B2C readiness, started from low profit product categories such as books and CDs, consequences, its brand image fixed to low-profit products.
B2C-retailing The Best player:360buy.com (Entered the market in 2004, market leader in 2010 with 24% value share (EI, January 2011))	Entered the market at the right time; Transferred the founder's expertise in providing 3C products from offline to online operation.	Lower the cost of the value activities by learning from the leader's experience i.e. key value activities of online sales—low cost, logistics and after-sales services; Advanced logistics and distribution systems; Convenient customer refund services; Provide higher-profit product categories (i.e. 3C products which stand for Computer, Communication, and Consumer Electronic); The great improvement of the B2C readiness (e.g. online payment, logistics and customer acceptance).

B2C-online gaming EGame (Entered the market in 2001, top 3 market player in 2010 with 13.6 % value share (iResearch, 2011))	Sought the historic opportunities of the low industrial entry barrier and fewer restrictions on the industry; Relatively low-cost of building brand identity and loyalty; Relatively low-cost of building user base; Reaped high profit margins accompanying the industrial introduction stage.	Faced strategic transformations constantly due to the changes of the market such as from users and government policies; Cost of educating users to accept online transaction.
B2C-online gaming The Best player:Tencent (Entered the market in 2004, market leader in 2010 with 29.1 % value share (iResearch, 2011))	Entered the market with the largest user base.	Has built up the largest user-base in China through its offering of free online services such as online communities, instant message services, web portals, etc. Shared this advantage with its online gaming operation; Shared its innovation in online payment with its online gaming operation (e.g. its online currency, Q Coins, can be used to purchase virtual goods.).

For the Internet pragmatists, by the time of investigation, most housing developers and manufacturers regarded B2C as non-pragmatic although there were some pioneers in each industry. For example, Vantone-Ehouse pioneered the 'clicks-and-mortar' model and failed. Haier pioneered B2C operation by adopting an e-shop model.

In the housing development industry, a lack of B2C readiness and the restriction on land purchase explained Vantone-Ehouse's unsuccessful experiment. In the manufacturing industry, Haier hoped to seek first-mover advantage. However, Haier's B2C operation didn't expand as rapidly as other leading e-retailers. The business model of 'e-shop' (referring to selling own branded products) explained the slow expansion of the B2C operation in Haier. B2C operation becomes a complementary channel to offline channels. However, as Internet retailing in China has become an increasingly important channel for established players, many manufacturers have started to explore actively this application. They are facing the choice of opening B2C portal by themselves or cooperating with third-party operators or approaching both approaches. For example, in recent years Founder has actively developed its B2C portal. In 2010, Dell was the number two top player in Internet retailing sector in China with 9.9% value share (EI, January 2011). Meanwhile, Dell opened an e-shop on Taobao.com (China's EBay).

In order to propose e-business strategies, companies also need to understand key business challenges that they face. They can then consider types of e-business applications' that can provide potential solutions to these challenges. Table 11-3 illustrates the key business challenges faced by each of the industries and the potential solutions which are integrated with e-business tools.

The differences in e-business challenges across the industries result in differences in the overall objectives of e-business strategies, for example:

- customer-orientation (in the housing development industry)
- using IT to support corporate strategies such as e-SCM and globalization (in the manufacturing industry), and
- resource integration (in the EC industry).

Table 11-3: The types of e-business applications as solutions to key business challenges

Industries	Types of e-business application	E-business-enabled solutions	Key business challenges
Housing development	T2: e-procurement.	Cost reduction and cost control across regions.	Marketing expansion at national scale. Mature customers.
	T1.1:E-CRM (B2C); T3: B2C website.	Brand-building and maintaining.	
	T5: KMP	Standardisation and efficiency in product design and copying of best practice across regions.	
Manufacturing	T3: B2C website.	Brand-building and maintaining.	Maturity stage. Narrower profit margins. Globalisation.
	T2.1: e-procurement.	Cost advantage	
	T2.2: e-procurement; T4: E-VCM.	Innovation (OIC, SC linkages).	
	T1.3: E-CRM (B2B).	Operational efficiency (SC linkages).	
EC-online retailing	T1.1: E-CRM (B2C); T3: B2C website.	Marketing cost.	Introduction stage. High marketing costs. Marketing expansion.
	T1.1& T3.	Brand-building.	
	T2.2: e-procurement; T4: E-VCM.	Operational efficiency, cost reduction (OIC, SC linkages).	
EC-online gaming	T1.1: E-CRM (B2C).	Brand-building and maintaining.	Strong bargaining power of global game providers. R&D capability. Extending customer base.
	T1.2: E-CRM (B2C).	Innovation.	
	T4: E-VCM.	Operational efficiency.	

The findings from the case companies have also pointed out possible management interventions that are needed in the process of obtaining e-business enabled value creation (see Table 11-4).

Table 11-4: Key management intervenes in the e-business management

Types (T)	Key e-business applications	Sources of competitive advantage (SCA)	Key management interventions
T1.1 &1.2	E-CRM (B2C)	SCA1: brand loyalty; SCA2: innovation.	Customer resource integration; Integrating E-CRM with sales systems.
T1.3	E-CRM (B2B)	SCA4: SC linkages (coordination)	Trust-building
T2.1	E-procurement	SCA2: cost reduction	Optimise supplier network
T2.2	E-procurement	SCA3: SC linkages (coordination)	Trust-building
T3	B2C website	SCA1: brand loyalty	Improving delivery speed and after sales services.
T4	E-VCM	SCA6: online information capabilities	Trust-building and collaboration; Optimise business process; Modification of received information before use; Continuously update information infrastructure.
T5	KMP	S-CA5: efficiency (in communication and employees)	Information management

For example, in term of e-CRM (B2C) application, EGame1 discussed the importance of integrating users' resources and providing integrated customer services. Customer resource integration can also lead to customer-oriented product development and marketing activities.

Case companies in the manufacturing industry optimized their supplier network in the process of implementing e-procurement. The results are that they can either purchase at global scale or strengthen partnership relationships with suppliers.

TCL1 discussed that trust-building and the sales model decide whether the dealer inventory management system can be successfully implemented.

The findings, based on the manufacturing industry, have suggested that the key factors that decide the success of e-SCM/VCM are trust-building and collaboration between companies and their business partners. In response, companies have to build mutual trust to get relatively more accurate information, and a pragmatic approach is to modify

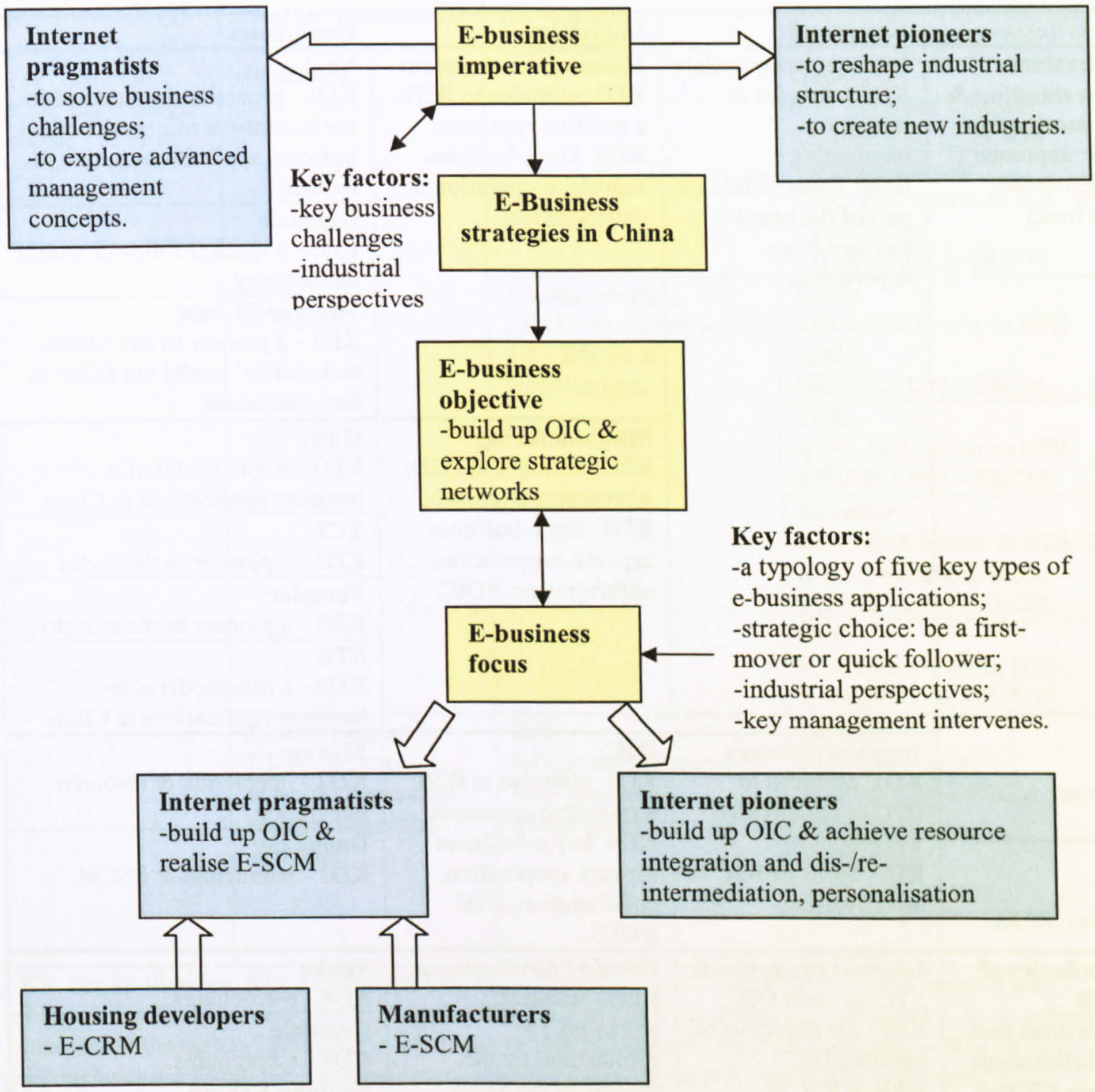
incoming information before using it. The finding of emphasis on trust-building when managing e-SC in China is consistent with the findings proposed by several researchers. For example, Martinsons (2008) argues that institutional deficiencies such as in the absence of rule-based systems encourage people in China to do business with those that they know and trust—family, friends, classmates and others in their in-group or network of connections. In-group members tend to share key information selectively in order to maintain both their competitive advantage and flexibility (Burrows et al., 2005). Information is exchanged through personal communications that are difficult to codify (Martinsons and Westwood, 1997). Lovett et al., (1999) also argue that supply chains and markets remain highly fragmented and poorly coordinated because people share information very selectively and assist each other informally. Child et al., (2005) conclude that commitment and trust are the key attitudes most strongly associated with success in network relationships.

Haier has suggested the need of integrating information management, e-business and business process optimisation in order to manage e-SCM successfully.

Virtual organisation is an emerging form identified from the case companies although different degrees and different forms of virtuality in organisation exist. For example, Dangdang outsources most of the activities in the value chain such as through strategic alliance with physical book chain stores and working in tight relationships with delivery companies. Haier organises linkages (e.g. information processing such as making/taking orders) with suppliers and key customers virtually while manages the shipment and manufacturing in a conventional manner.

Based on the analysis in this section, we can provide a set of guidelines when formulating e-business strategies in China (illustrated in Figure 11-3).

Figure 11-3: A framework for formulating e-business strategies in China



OIC: online information capabilities.

11.2.3 Research question three: are there differences between firms in the same sector in the use of e-business? Are there differences between sectors in the use of e-business?

Research objective 7: to discover industrial factors in the use of e-business

Based on the aforementioned analysis (sections 11.2.1 and 11.2.2), Table 11-5 presents the difference and similarities between firms in the same sector and between sectors in the use of e-business.

Table 11-5: Key differences and similarities within industries and among industries

Key criteria	Key groups	Industries	Companies
1. e-business understanding & Key motivations. (KS1: approach IT and EB at the same time)	**Internet pragmatists** KD1: attitudes to B2C (non-pragmatic); KD2: focus of B2C: a part of the brand strategy & an experiment.	**Housing development** KD3: attitudes to B2B: a reactive approach; KD4: key e-business aspects: e-operation & collaboration.	**Vanke** KD3 - proactive attitude within the industry; a role model of e-business applications within the industry.
			Gemdale KD3 - a quicker follower within the industry.
			Vantone-Ehouse KD1 - a pioneer of the 'clicks-and-mortar' model but failed in the experiment.
		Manufacturing KD3: attitudes to B2B: a proactive approach; KD4: key e-business aspects: e-operation, collaboration &OIC.	**Haier** KD3 - a role model of e-business applications in China.
			TCL KD3 - a pioneer in the sector.
			Founder KD3 - a pioneer in the industry.
			STE KD3 - a role model of e-business applications in China.
	Internet pioneers KD1: attitudes to B2C (a competitive weapon); KD2: focus of B2C - effectiveness.	**B2C** KD3: attitudes to B2B: a proactive approach; KD4: key e-business aspects: e-operation, collaboration, B2C &OIC.	**EGame** KD2 - interaction & resource integration.
			Dangdang KD2 - interaction & ESCM.
2. Typologies of key EB applications and the relationships between EB and SCA. (KS2: adopted T1, T2, and T3)	**Internet pragmatists** KD5: weaker OIC; KD6: the objective of building OIC - achieve ESCM.	**Housing development** KD5 - weakest; KD7 - no T4 application, on the process of realising online information flows; KD8: T3 model - e-brochures; KD9: ECRM-B2C.	**Vanke** KD8 - e-brochures.
			Gemdale KD8 - e-brochures.
			Vantone-Ehouse KD8 - online catalogues.
		Manufacturing KD5 - medium; KD7: building up T4-ESCM; KD8: T3 model - e-shops; KD9: ECRM-B2B.	**Haier** KD8 - e-shop.
			TCL KD8 - online catalogues.
			Founder KD8 - e-shop.
			STE KD9: ECRM-B2C.
	Internet pioneers KD5: stronger OIC; KD6: the objective of building OIC - dis- or re-intermediation & personalization.	**B2C** KD5 - strongest; KD7: adopted T4 - ESCM and OIC; KD8: T3 model - e-retailers & user portals; KD9: ECRM-B2C.	**EGame** KD6: disintermediation & personalization; KD7: obtained OIC; KD8 - e-retailer.
			Dangdang KD6: reintermediation & personalization; KD7: obtained ESCM & OIC; KD8 - user portals.

3. e-business strategies. (KS3: overall EB strategic objective - to create OIC; KS4: EB strategic choice - to be or not to be first movers)	**Internet pragmatists** KD10: different strategic imperative - solve business challenges.	**Housing development** KD11: the objective of EB - customer-orientation.	**Vanke** KS4 - first mover in e-procurement within the industry; KD10& KD11 - ECRM.
			Gemdale KS4 - quicker follower; KD10& KD11 - ECRM
			Vantone-Ehouse KS4 - first-mover in B2C within the industry; KD10& KD11 - ECRM.
		Manufacturing KD11: the objective of EB - ESCM & globalisation.	**Haier** KS4 - first-mover in B2C &B2B. KD10& KD11 - ESCM.
			TCL KS4 - first-mover in B2B. KD10& KD11 - ESCM.
			Founder KS4 - first-mover in B2B & quick follower in B2C; KD10& KD11 - ESCM.
			STE KS4-first-mover in B2B; KD10& KD11 - ESCM.
	Internet pioneers KD10: different strategic imperative - reshape industrial structure.	**B2C** KD11: the objective of EB - resource integration.	**EGame** KS4-first-mover; KD10& KD11-OIC & resource integration.
			Dangdang KS4 - first-mover; KD10& KD11 - OIC & resource integration.

KS: key similarities; KD: key differences; EB: e-business; OIC: online information capabilities;
T1 includes T1.1, 1.2 and 1.3; T1.1: exploiting e-CRM (B2C) to achieve brand loyalty; T1.2: achieving innovation through e-CRM (B2C); T1.3: improving SC linkages through applying e-CRM (B2B);
T2 includes T2.1 and 2.2; T2.1: achieving cost reduction through applying e-procurement; T2.2: improving SC linkages through applying e-procurement;
T3: improving brand loyalty through applying B2C website;
T4: obtaining online information capabilities through applying ERP or/and e-business systems.

11.2.4 Research question four: does Porter's VC provide a framework to capture such differences and guide companies in the use of e-business to gain competitive advantage?

As illustrated in Figure 10-11, 12, and 13, this research demonstrates that the virtual value chain (VVC) and value system are suitable frameworks to systematically analyse the types of e-business applications and their relationships with the key SCA. Meanwhile, the RBV is an important conceptual basis for drawing the typology of SCA and explaining these SCA. Derived from the RBV, the OIC is a key concept that forms the basis of VVC.

The integration of the value system and VVC and OIC provides a simple framework to see the differences in e-business value creation across industries (see Figure 10-13). This research suggests that OIC are the key successful factor for companies to create e-business value and therefore competitive advantage. It is also the key criterion that divides Internet pioneers and Internet pragmatists. This research has found that the manufacturers have been building up OIC either with upstream partners or with downstream partners. They are in the process of building OIC throughout the value system. EC companies were founded with the aim of building up OIC. Hence, they are doing better in constructing OIC. Housing developers are far behind.

Furthermore, OIC are the foundation for exploring strategic partnerships and network organisations. Walters and Rainbird (2007) also observe that collaborating with others in value chains, then the dynamics of that collaboration is critical in a New Economy context. They suggest that the network model (or virtual organisation model), which was defined as creating partnerships across companies using value chain (or value net) structures with complementary companies, offers the partnership the ability to create competitive advantage through differentiation. The approach to differentiation is partner/cooperative innovation which can include upstream (e.g. supplier relationship management demonstrated by Dell) and downstream (e.g. customer relationship management demonstrated by Caterpillar with its distributor/service network). They contend that for both Dell and Caterpillar, communication through efficient ICT systems is a critical input to the partnership. Our research proposes that OIC is a critical foundation for the successful partnership innovation. OIC include not only efficiency and effective of information management but also the capability of utilising corporate resources to building key success factors. These factors include trust-building, information modification, and the dynamic of information management both in information integration and IT infrastructures.

Figure 10-12 illustrates that the integration of OIC (T4) and VVC is a useful framework

to state case companies' action of moving activities from the place to space. Consequently, the management of the physical value chain can be improved.

The findings support the necessity of transforming the value chain model so as to make it more suitable in the e-business context. The research also verifies that integrating the VVC, value system, and OIC, which emphasizes collaboration in the value system and networks, works in the e-business context. Hence, the research has proposed an effective approach to transform the VVC. This proposition supports the view that it is important to reconcile both environmental (activity-based view) and resource explanations when evaluating the sources of competitive advantage (Fahy and Hooley, 2002, Cockburn and Henderson, 2000, Combs and Ketchen, 1999) and extends this view in the e-business context.

11.3 Contributions

11.3.1 Contribution to knowledge

This research has provided a distinct contribution to knowledge in a number of ways:

Most importantly the research has provided an innovative solution towards guiding e-business-enabled value creation. A framework builds on three key constructs: VVC, value system, and OIC (see Figure 10-14). It is an innovative approach that integrates the environmental view and the RBV. This research has also identified key success factors of building OIC. Among them, trust-building and cooperative innovation are the primary factors. Building on OIC, networked organisation emerges as a new trend of organisational structure.

This research has identified six basic types of SCA based on the Chinese business context. By linking the typology of SCA with e-business applications, this research has proposed a typology of five key e-business applications which is a simple approach in helping companies to identify areas of e-business applications for the purpose of creating competitive advantage.

Derived from the empirical evidence in China, the research has also modified the VVC in order to systematically capture the types of e-business applications.

This study reveals that there are two distinct groups when exploring e-business value creation: Internet pioneers and Internet pragmatists. The research has also provided new industry-specific insight into e-business applications which is useful for helping companies to improve their e-business applications by learning from success and failure and seeing the development patterns of e-business development in China. This experience is also valuable to the Western companies who want to use e-business tools to exploit business opportunities derived from Chinese domestic consumption.

The theoretical framework (shown in Figure 10-14) can be used as a basis for more

research that investigates e-business applications in other Chinese industries or in other emerging economies.

A summary of the key contributions is presented as follows.

An innovative solution towards guiding e-business applications that focuses on sources of competitive advantage

The integration of the value system, VVC and OIC is a simple framework that (shown in Figures 10-11, 12, and 13):

- Clearly states that the investigation of value creation gained from e-business applications should focus on the value system and linkages (relationships and co-operation) within and between companies;
- Clearly states the role of information management as a source of competitive advantage by adding OIC into VVC;
- Clearly states the actions of moving activities from the offline to online channels.

'Networked/virtual organisation' emerges as a key organisational structure to address OIC. E-business is seen as the most significant facilitators of virtual organisation (Child et al., 2005). The virtual organisations identified in this research features as boundaryless and inclusive, flexible and responsive (Warner and Witzel, 2004).

This finding contributes to RBV because of its unique combination of the empirical setting (an emerging/transitional economy), the integrated approach, and the e-business context.

A typology of key e-business applications

Based on the cases studied, this research has found that e-business applications in China can potentially lead to six categories of SCA: brand loyalty, innovation, cost reduction, supply chain linkages, efficiency, and online information capabilities.

By linking the typology of SCA with e-business applications, this research has proposed

a typology of five key e-business applications to investigate e-business value creation across industries (shown in Figure 10-14 and Table 11-1).

The research has also found that an industry perspective has played an important role in exploring e-business value creation. This study provides critical insight into the key differences and similarities within industries and among industries in terms of the use of e-business (shown in Table 11-5).

Modification of virtual value chain

Physical value chain (PVC) incurs costs (e.g. trade-offs in performing different activities) as activities move from one linkage in the chain to another (Porter, 1985). The most efficiently configured PVC takes advantage of what economies of scale and scope exist in the technologies and process of the firm (Porter, 1985, Child et al., 2005). Rayport and Sviokla (1995) depict a virtual value chain (VVC) that needs to be managed separately from the PVC as well as in combination with the PVC. It does not require the realization of scale-and-scope economies to achieve cost efficiency. Often an activity may be moved from the PVC to the VVC with advantage as e-business can transform the richness/reach trade-offs (Evans and Wurster, 2000).

This research proposes the framework of integrating the value system and OIC with the VVC. This approach emphasizes relationships and coordination between companies in the value system. This view has gained increasing support in recent years especially in the context of e-business (Lawton and Michaels, 2001, Peppard and Rylander, 2006, Child et al., 2005).

Empirical evidence of value chain transformation in e-business context

The case companies provide examples of value chain transformation using e-business tools. As discussed in chapter 10 (section 10.3.1), in order to tackle the key challenges encountered during business operations (e.g. inaccurate marketing forecasts and

improving profitability), the manufacturers and dotcoms aim to achieve e-VCM. As a result, manufacturers can obtain advantages in: (1) speed-to-market, (2) coordination between business partners in marketing and inventory management; dotcoms can realise: (1) disintermediation while sustaining high-quality customer service cost-effectively through applying e-CRM, (2) personalised marketing.

The constructing of OIC lays the foundation for e-VCM and VVC. By integrating ERP with e-business systems, the case companies are continuously building up their OIC (illustrated in Table 10-5).

Industry-specific insight into e-business applications

The research finds the distinct difference in the e-business application between Internet pioneers and Internet pragmatists. These differences reflect on their attitudes towards e-business (in both B2B and B2C areas), the focus of key e-business applications and their e-business strategies.

In terms of the key e-business applications, OIC are the dividing factor between Internet pioneers and Internet pragmatists. Manufacturers and EC companies have actively built up their OIC. The housing developers are at an initial stage of realising information integration. Based on their OIC, manufacturers have achieved e-CRM (B2B). Currently, e-CRM (B2B) (channel management system) is a key success factor for the Chinese manufacturers. By obtaining OIC, EC companies own the consumer relationship, whose lifetime value is often the value of the business (Evans and Wurster, 2000).

However, a common interest in obtaining OIC and exploiting e-CRM will motivate Internet pragmatists (including property developers and manufacturers) to learn from experience of EC companies.

Despite the difference across industries, the case companies have commonly adopted some types of e-business applications (i.e.T1.1 (e-CRM-B2C), T2 (e-procurement), and T3 (B2C website)) although these e-business tools have been exploited at different

levels.

Valuable experience to manage accessibility

Doing qualitative case study, gaining access can be difficult and time-consuming. By successfully gaining access to nine leading Chinese companies, this research provides valuable insights into managing accessibility for researchers who want to do qualitative case study research in China. As mentioned in section 6.2.1, telephone communication, obtaining trust during the interviews, and maintaining relationships with interviews after interviews are important skills.

11.3.2 Contribution to practice

As illustrated in Figure 11-2, this research shows that e-business is a useful tool for helping firms to achieve differentiation advantage and speed. Hence, e-business applications are very important to Chinese companies especially manufacturers because they urgently want to update their roles in the global value chain. E-business tools such as e-CRM, e-SCM, and OIC can facilitate Chinese companies to improve their brand names, efficiency and R&D innovation capability as well as to adopt new business concepts.

This research provides the companies with simple frameworks to guide their use of e-business:

- a framework of key value adding e-business applications;
- a framework of e-business strategy formulation.

Meanwhile this research also provides them with critical industrial insight into e-business value creation. This study shows the reasons for failure and success using examples with regard to e-business value creation. Hence it provides companies with a set of guidelines with e-business strategies (illustrated in Figure 11-3). Companies can

understand the key business challenges, e-business solutions to these challenges and the focus of e-business applications within their respective industries. They can also easily follow the best practice within their industries and think of approaches to transfer the best e-business practice of other industries into their industries.

Moreover, this research provides managers in other emerging economies as well as Western companies who compete in China with useful insight into e-business value creation within the investigated industries. This research provides them a simple framework for exploring e-business enabled value creation. Since China will shift economic growth from reliance on exports and investment toward domestic consumption, more and more Western companies will enter Chinese domestic markets. This research reveals that e-business has played an important role in marketing expansion in China. Hence, these companies will need guidelines on e-business management in China.

As suggested by Williamson and Zeng (2009), during the current recession, it is imperative for Western businesses to learn lessons from emerging market companies, in particular their experience in developing cost-innovation capabilities. Williamson and Zeng (2009) argued that smart emerging-market companies have built cost-innovation capabilities to unlock mass markets. By gaining cost-innovation capabilities, Western multinationals can both broaden penetration in emerging markets and target value-for-money segments in developed economies. This research provides insight into the approaches to building these capabilities by studying the leading Chinese companies' using e-business tools.

At the same time, Yueh (2011) suggests that the history of China's transformation is worth careful investigation to determine what lessons it could provide to other emerging nations. This research provides the evidence of this transformation in the Chinese B2C sector. In order to realise 'leapfrog' development facilitated by e-business technologies, the Chinese government has applied liberal policies towards B2C markets as well as

economic incentives. These policies encourage a climate of entrepreneurship and innovation as well as the imperative of seeking first-mover advantages. Many overseas returnees who are equipped with advanced knowledge and Western working experience have returned to China to establish e-business companies. Dangdang's founder is one of them. After over ten years of development, many Chinese dotcoms have outperformed their Western counterparts and dominated the Chinese B2C, C2C or B2B marketplace sectors. This insight into Chinese dotcoms may be instructive for other developing countries as they increasingly adopt e-business (Raven et al., 2007).

In the Chinese business context, this research has identified two promising areas of e-business enabled value creation: e-CRM and e-VCM (OIC form the basis of e-CRM and e-VCM). The case companies share the view that these two e-business applications hold the most promise for future development. Their proper application will contribute to sources of competitive advantage.

As the B2C readiness in China has been significantly improved since 2008, this research suggests that companies need to develop B2C application urgently so that they will not miss the historic opportunities.

11.4 Limitations of the research and suggestions for future research work

Limitations

Due to the resources limitation, the pragmatic consideration of accessibility, and methodological setting, this research has some limitations.

First, empirical data collection was carried out between 2004 and 2005. Although the timing of the research captured the crucial period of e-business development in China, the transaction period from imitating Western models to localising these models, it lacks the very latest empirical data to address the dynamic changes in the e-business context. In particular, since 2008, B2C in China has evolved at high speed. Shopping online has become a well-accepted channel for Chinese people under 40s. Consequently, more influential e-retailers are emerging. Meanwhile, established manufacturers have explored B2C more actively.

To address this limitation, secondary data regarding the latest e-business development of the investigated industries was collected. This data included interviews with the senior leaders, research reports regarding e-business in China conducted by some research institutes, and journal articles.

Secondly, although this research has investigated industries in two key groups: Internet pioneers and Internet pragmatist, the nine cases were limited to three sectors—housing development, manufacturing (electrical appliance, PC, and telecoms equipment) and dotcoms (online gaming and retailing). More cases within these industries will be helpful for further validating the theoretical framework. For example, the Chinese automobile manufacturing sector is an interesting sector for further investigating because cooperation plays an important role in this sector. E-business is expected to contribute to cooperation. Meanwhile, China's automobile industry has been rapidly developing since 2000 and it is now the world's largest car market. Also, since the

Chinese e-retailing sector is rapidly changing landscape, some key players emerge as the research progressed. One of them is 360buy.com. The company has established itself as the market leader after just four years of development due to its right timing of market entry, right products and tight control over the quality of its products, and effective delivery service.

Thirdly, the theoretical framework proposed in this thesis is in its embryonic stage. It could benefit from a richer variety of case studies to enable more cross-references between the types of SCA and types of e-business applications. In particular, comparative case studies between Chinese companies and Western companies who compete in the Chinese market would provide interesting insight for the theoretical framework. A good pair would be Dangdang and Joyo.com (Amazon China) who compete in the same market segmentation.

Finally, this research has been based on analytical generalization. Hence, it would benefit from further research based on statistical generalization.

Suggestions for future research work

Building upon the research framework and the findings of this research as well as the limitations of the research, a number of further research directions are suggested.

First, this research has revealed that both manufacturers and dotcoms share the commonality of building up OIC and exploring e-VCM. Hence, more qualitative case studies are needed to validate the proposed theoretical framework and to move a step forward by exploring the conditions and processes of building up OIC and consequently achieving e-VCM. Moreover, the investigation of e-VCM's contribution to Chinese companies' cost-innovation capabilities is a promising research area. A comparative case study, which explores e-business-enabled value creation between Chinese companies and multinational companies, will provide a valuable perspective to the theoretical framework. As suggested in the research limitations section (above), the

potential pairs could be Chinese and multinational companies in the automobile manufacturing sector and the e-retailing sector.

Secondly, within e-VCM, this study reveals that e-CRM could be a source of competitive advantage shared across industries. Despite the continuous progress achieved by the case companies (e.g. Vanke, Haier, EGame, and Dangdang) in the applications of E-CRM, they need theoretic instructions urgently. Hence, more case studies are needed to gain deeper insight into the application.

Thirdly, this study has also suggested that e-business value creation should focus on the value system and linkages within and between companies. Hence, an important concept worth further investigation is 'value network'/ 'networked organisation' in an e-business context. Some researchers suggest that the locus of value creation has migrated from the linear value chain to the value network (Li and Whalley, 2002, Peppard and Rylander, 2006, Kauffman et al., 2010). They argue that the value network concept is more suitable to capture the complexity of competition, the co-operative behaviour with inter-firm relationships, and value creation in relationships. This research supports their view. Moreover, this research has identified OIC as a key construct for managing value networks and revealed some key success factors for building up OIC. However, further research is needed to investigate the relationship between OIC and the value network.

Fourthly, this research has revealed the distinct feature of e-business in China—approaching automation, informatization and e-business at the same. This feature is shared by companies of emerging economies. Hence, the theoretical framework and the key findings based on this research can be used as a basis for similar studies carried out in other emerging economies.

Fifthly, this research offered a reflection of e-commerce development at a critically important period of time—dotcoms started up and on the process of establishing their business. Hence, this thesis presented the e-business strategies that were used by dotcoms at the first critical stage of e-commerce development in China. Since 2008, in

particular by the end of 2010, the e-commerce development in China has entered a second critical stage—leading dotcoms are starting consolidating their positions. The most influential two events that reflected these were the rivalry between Tencent and Qihoo360 (happened between September-November 2010) and the price wars among e-retailers i.e. Dangdang, Joyo-Amazon and 360buy.com (started in December 2010 and it is ongoing). These companies are competing fiercely to obtain a larger user base and consolidate their current leading positions. It would be interesting to further investigate how these companies use e-business tools and strategies to strengthen their current leading roles.

Additionally, when investigating the e-commerce sector in China, another three constructs are worth further investigation - the relevant government policies and support, entrepreneurship, and innovation. Comparative research projects between China and other emerging and/or transitional economies (e.g. India and Russia) would be interesting because developing and transitional economies are typically characterized by an active governmental involvement in business, both through ownership and through regulation (Peng, 2000, Child and Rodrigues, 2005).

Finally, the proposed theoretical framework can be further validated via quantitative research. For example, a survey-based study can be carried out to test the SCA that have been identified in this research and to test the relationships between types of e-business applications and SCA.

In conclusion, this research has provided an important step towards investigating e-business value creation in China. The conceptual framework developed in this study has helped to explain and explore the key e-business applications and their relationships to SCA. Meanwhile, the conceptual framework has moved a step forward with transforming VVC in the e-business context. As a rarely conducted study in a similar field, this study has met the research purposes by filling the research gaps identified.

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Appendix 1: Background of the regions under investigation

The People's Republic of China consists of 23 provinces, five autonomous regions, four municipalities, and two special administrative regions (SARS). Basically, China's administrative divisions are categorized into three levels:

- first-level refers to provinces, autonomous regions, and municipalities,
- second-level refers to counties, autonomous prefectures, and sub-provincial cities,
- third-level refers to townships and villages.

In mainland China, although provinces are subordinate to the central government, provincial officials have a large amount of discretion with regard to economic policy. Municipalities are large cities that have the same administrative level as provinces. Municipalities control county-level divisions.

Our case companies' operation locates in the costal/east regions and the Yangtze River Delta, the Pearl River Delta, and the Bohai Sea Rim (Among these regions, the key economic figures of the first-level administrative regions (highlighted in Bold) are listed on Table 1).

The Yangtze River Delta, situated in southern **Jiangsu** and northern **Zhejiang** provinces, covers 100,000 square kilometres. Fourteen cities are located in the region, which has a population of about 100 million. **Shanghai** serves as China's leading industrial and technological base and plays a leading role in the delta's economic development. (Chinatoday, 2011a)

The Pearl River Delta is located at the entrance of the South China Sea and covers 40,000 square kilometres, with a population of 20 million. The Pearl River Delta has favourable conditions for developing foreign trade because of its convenient transportation network, and its proximity to Hong Kong, Macao and other islands on the South China Sea. Around 20 years ago, **Guangdong** province was one of the first

provinces to implement China's opening policy. The cities of Zhongshan, Dongguan, Shunde and Nanhai have been nicknamed the "Four Little Tigers" of **Guangdong** Province, because of their rapid economic growth and improved living standards. (Chinatoday, 2011b)

The Bohai Sea Rim is rising as China's Northern economic power house and rivals the Pearl River Delta and the Yangtze River Delta. Geographically, the Bohai Sea Rim covers **Liaoning, Hebei** and **Shandong** provinces as well as the **Tianjin** Municipality. But economically, it can further expand to a much larger area to embrace **Beijing,** Shanxi Province and the Inner Mongolia Autonomous Region, accounting for 12 per cent of the country's territory and 20 per cent of the nation's population. The **Beijing-Tianjin-Hebei** region has the strongest economic strength in the rim area. (People's Daily, 2003)

China Internet Network Information Centre (CNNIC) divides Internet distributions into three regional areas: East China, Mid China, and West China.

- East China (the costal regions) includes: **Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang,** Fujian, **Shandong, Guangdong** and Hainan;
- Central China includes: Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan;
- West China includes: Inner Mongolia, Guangxi, Chongqing Municipality, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang.

Table 1: Comparing the regions (first-level administrative division) under investigation with countries (in 2010)

Administrative Division (provinces or municipalities)	GDP per capita (US$)/Rank in mainland China	Equivalents (US$)	GDP (billion, US$)/Rank in mainland China	Equivalents (billion, US$)	Populations (million) /Rank in mainland China	Equivalents (million)
Shanghai (municipality)	22,983 (1)	Saudi Arabia 22,850	250.00 (8)	Finland 239.80	19.4 (25)	Cameroon 20.0
Beijing (municipality)	22,010 (2)	Slovakia 22,010	210.00 (13)	Philippines 199.80	17.2 (26)	Chile 17.1
Tianjin (municipality)	19,284 (3)	Hungary 19,030	133.00 (20)	Hungary 129.20	12.3 (27)	Zimbabwe 12.6
Jiangsu	13,714 (4)	Belarus 13,770	596.00 (2)	Switzerland 527.90	77.5 (5)	Iran 75.1
Zhejiang	12,876 (6)	Azerbaijan 12,750	379.00 (4)	Austria 378.00	52.5 (10)	Myanmar 50.4
Guangdong	12,074 (7)	Kazakhstan 11,990	665.00 (1)	Indonesia 703.20	98.3 (1)	Philippines 99.9
Shandong	10,914 (8)	South Africa 10,630	574.00 (3)	Switzerland 527.90	93.7 (2)	Vietnam 87.8
Liaoning	10,772 (9)	Costa Rica 10,570	260.00 (7)	United Arab Emirates 269.60	43.1 (13)	Sudan 43.2
Hebei	7,276 (12)	Albania 7,480	287.00 (6)	Colombia 285.10	70.5 (6)	Congo 67.9

Source: The Economist (2011), "Comparing Chinese provinces with countries: All the parities in China-Which countries match the GDP, population and exports of Chinese provinces?" Last updated date: 25 February 2011. Retrieved from http://www.economist.com/content/chinese_equivalents, accessed date: 25 March 2011.

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Appendix 2: Standard access letter (in 2004 and 2005 (two letters in 2005))

Dear Sir or Madam:

I am a Chinese PhD student who studies in the UK. My research topic is to identify opportunities and competitive advantages gained from e-business, especially in Chinese industry context. This is a three-year project and the expected result is to contribute to a more solid and practical theoretical basis for how Internet-based business can create sustainable competitive advantages.

In order to bridge the gap between research and practice, I hope to listen to the practical experience from Chinese managers who have involved in e-business application. The Open University Business School fully support my research project. Moreover, they provide me some research fees for this field data collection. We believe that this is an excellent opportunity to exchange management experience between China and European countries.

Due to your company's excellent performance and active attitude to e-commerce adoption in recent years, we believe that your experience will be of great value in our research. Meanwhile, we believe that by reflecting upon your recent experiences you will be able to consolidate the benefits to performance that you have already gained.
We would thus like to conduct a short series of interviews (about 45 minutes for each interview; if possible, in an individual context) with the managers who are the prime movers in introducing e-commerce to your organization and for strategy formulation.

Thank you very much for considering our request!

Sincerely

Sophia, Yan Tao
PhD Student, Open University Business School
May 26, 2004

Dear Sir or Madam,

I am a Chinese PhD student who studies in the UK. My research topic is to identify opportunities and competitive advantages gained from ***e-business*** by Chinese companies, especially in Chinese industry context. This is a three-year research project, which is expected to be completed in October 2006. This research will provide a rich description and understanding of the nature of e-business applications in China. Therefore, possible solutions can be proposed. The result will be written in my PhD thesis. Meanwhile, some important findings are expected to be published in academic journals or academic conferences. (Please see the following letter for a little more information on my research project.)

In order to bridge the gap between research and practice, I hope to have a chance to listen to the practical experience from Chinese managers who have been involved in e-business application. The Open University Business School fully supports my research project. Moreover, The School provides me with some research fees for this field data collection. We believe that this is an excellent opportunity to exchange management experience between China and European countries.

Due to your company's excellent performance and active attitude to e-business adoption in recent years, we believe that your experience will be of great value in our research. Meanwhile, we believe that by reflecting upon your recent experiences in e-business applications you will be able to consolidate the benefits to performance that you have already gained.

We would thus like to conduct a short series of interviews (about 45 minutes for each interview; if possible, in an individual context) with the managers who are the prime movers in introducing e-business to your organization and for strategy formulation. Naturally, the information you provide will be treated in the strictest confidence and will only be used for academic research. Individuals will not be identified in any analysis.

I am planning to go back to China for this data collection during the period from the early May to the end of June. I am looking forward to your cooperation! Thank you very much for considering our request!

Sincerely

Yan Tao
PhD Student, Open University Business School
April 26, 2005

Dear Sir or Madam,

For your further understanding about my research, in the following I would like to briefly introduce you my main research topics.

The main research topic: investigate how to gain competitive advantages from e-business applications in several industries of Mainland China.

In this research, e-business tentatively refers to using Internet-related technology to maintain business relationship, conduct key business processes and buy and sell goods and services. This research will investigate about ten famous Chinese companies in about four industries in the issue of e-business application. Therefore, a comparison study cross several industries can be done. Meanwhile, for each industry, one foreign counterpart will be chosen as a benchmarking company.

The research can be divided into five stages: literature review (October 2003-May 2004); first stage data collection (June 2004-July 2004); first stage data analysis and literature review (August 2004-April 2005); second stage data collection (May 2005-June 2005); data analysis, literature review and main conclusions (July 2005-October 2006).

The main research topic will be expanded to following areas:

- The main or potential e-business applications in your company;
- The impacts of above mentioned e-business applications on your company's competitive advantages, value creation, organizational structure and organizational culture;
- The impacts of above mentioned e-business applications on your industry;
- The main problems encountered in your company's e-business application;
- Your company's current or future e-business strategy.

I am looking forward to your cooperation! Thank you very much for considering our request!

Sincerely

Yan Tao
PhD Student, Open University Business School
April 26, 2005

Appendix 3: Core interview questions

1. Could you please talk about your understanding of the concept of e-business? What is e-business in your company?
2. Could you please describe the main e-business applications in your company? Could you please give some examples or details about these applications? For example, the example of applications in business processes, explanations on e-business' contribution to these business processes.

- Question to online pragmatists: has your company tried to identify possible ways of integrating e-business along the value chain? What are these chances?

3. Overall, what are the main sources of competitive advantage in your company? Could you please give some examples to illustrate it?
4. How has/ will e-business application affected/ affect competition and sources of competitive advantage mentioned before? Could you please give some examples to illustrate them?

- Question to online pioneers: has e-business brought significant strategic advantages for your firm compared with traditional players?

5. What is the impact of e-business on value streams in your firm? (e.g. new ways of value generation enabled by e-business.)Could you please give some examples to illustrate it?
6. Could you please describe the main changes happening in the industry accompanying the adoption of e-business application? (e.g. the relationship between your company and suppliers, consumers or main competitors)

- Question to online pioneers: what kind of major changes have your firm introduced to the industry e.g. consumers purchase habit and suppliers' relationships?

7. Based on your observation, could you please describe the significant e-business applications that you identified as a benchmark either in or beyond your industry?
8. Does your company have to change organizational structure/culture and management skills in terms of e-business applications?

- Question to online pioneers: as a network-based company, are there any specific features in terms of organizational structure compared with traditional companies in your industry? Any competitive advantages gained from this organizational structure?

9. Could you please describe how your company has dealt with the trade-offs between Internet and traditional approaches?
10. Based on your company's experience in e-business, could you please describe the main problems encountered in terms of e-business application? For example, the main problems of achieving expected aims of e-business application?
11. After years of experiment in e-business, have you found that some theories or business models are instructive in terms of e-business applications?
12. Looking back on your company's experience in e-business in recent years, can you describe your company's current e-business strategy and its e-business strategy for the future?

Appendix 4: Further questions to individual case company

Industry/concept-ual categories	Company	Further questions	Respective interviewees	Corresponding research
Housing development/ Internet pragmatists	**Vanke**	**A: on e-business applications** 1. 'Not like foreign online procurement model (OP), our OP is in the early stage'—further details needed: 1) does early stage refer to only limited P processes moved online, which mainly focuses on information communication? 2) What is the foreign OP model? 3) Details on the future plan on OP? 2. Details of HRM. 3. Details of the CRM system. 4. Details of evaluation.	IS/e-business manager	1. The key differences between Chinese companies and Western companies in term of e-business application; 2. OA's relation to e-business.
		B: on strategy 1. Main CA (Core Question-CQ2) 1.1 main CA 1.2 company strategy 2. Your understanding of e-business 2.1Its possible impacts on CA(CQ3); 2.2 on OS and culture (CQ7); 2.3 on industry structure 2.3.1 the understanding of industry structure/ the characteristic of the industry/status quo 3. Any e-business strategy? 4. The most significant e-business or IS applications in your company? 5. Main obstructions of e-business adoption?	Senior managers focusing on strategy formulation	
		C: on system users 1. Change of culture: employees' behavior 1.1 understanding of e-business 1.2 its impact on your working operation/process?	**A; B**	
Gemdale		**A:** 1. The difference between customer e-forum and customer community which is operated offline. 2. Details of KMS (sub-questions will be proposed based on literature review) Plus B& C (the same as **CI**)	**A; B**	1. KM, its technology infrastructure, main applications, relation to e-business
Vantone-Ehouse		**A:** 1 American model: 1.1 details? 1.2 example companies 2. Details of evaluation results of e-business application 3. E-business strategy of the company 4. Examples of e-business' impacts on business process & OS 5. progress of redefining enterprise resources based on business and information flow Plus B& C (the same as **CI**)	**A; B**	

Manufacturing/ Internet pragmatists	**Haier**	**A:** 1. Online & offline conflicts: except price conflicts, any other different policy? 2. What does the Company's brand include? 3. Details on B2B, CRM, and e-marketing activities. 4. Get the figure of Haier's business process. 5. Details on e-business application evaluation.	IS/e-business manager	1. Online & offline conflicts: 1.1 where do they come from?— ownerships of channels 1.2 when to build separate warehouses for online sales?— Tesco mentioned online sales scale.
		Plus **B& C** (the same as **CI**) B: 6. What does the Company's brand include? 7. Concise introduction of management restructure program & market-chain system & SBU management.	**B**	
	TCL- **Electrical**	**A:** 1. B to suppliers: details/ examples of applications in this area? Plus B, B6 & C (the same as **CI**)	**A; B**	
B2C-online gaming; Internet Pioneers/dot-coms	**EGame**	**A:** 1. Details of managing the virtual community of online game. 2. Details of customer service systems such as the subcategories. 3. Details on further investment in technology infrastructure. Is it mainly in customer service systems? 4. Details on Internet-based online payment: A) Connect with e-banking system? B) How do dealers collect money for your company? C) Any special systems like PayPal have been developed especially for Chinese consumers?	IS/e-business manager	
		B: 2. As a net work-based company, how will you define e-business? Other sub-questions are the same. 6. As a network-based company, any specific features of OS in your company compared with traditional companies. 6.1 The evolvement of OS? 6.2 The benefits of this OS.		

Notes:

- Need to add more information on the following: 1) the names and the positions of the interviewees; 2) relevant research articles; 3) background information for asking further questions.
- Questions to Internet pragmatists/incumbents and to Internet Pioneers/ dotcoms should be asked in different way. For example, their understanding of e-business, their e-business department's functions, and the change of OS and organisational culture. Moreover, the interviewees' roles may be different as well.
- The boundary/areas of e-business application: what applications can be included and what cannot?
- The relationship between stages/business models of e-business adoption and benefits achieved.

- Identify major opportunities in respective industries.
- Discover the activities that companies plan to pursue over the next few years.
- Suggest the possible approaches of e-business adoption.
- The theory-practice relationship.

Appendix 5: Case study protocol

The protocol is an effectively way of dealing with the overall problem of increasing the *reliability* of case study.

A. Purpose of case studies and research questions
A1: Case study questions and research questions and objectives
A2: The theoretical framework for the case study
A3: The protocol as a standardized agenda for the investigator's line of inquiry

B. Data collection procedures
B1: Cover letter includes: 1) the benefits of involved in the interview to the case company; 2) the nature and context of the research project and its objectives; 3) the role of interviewees; 4) an attachment outlining the research timeframe, the proposed nature of the participants' involvement in the project and the expected outcomes.
B2: Names of sites to be visited, including the names and positions of potential case participants
B3: Data collection plan (the calendar period for the site visits, the amount of time to be used for each visit: at least 45 minutes, and the level of effort to do each case study: emails and phone calls for gaining access, follow-up activities—sample thank-you letter, submission of draft report (C2) to site for review, a list of specific interview questions based on revised general core interview questions and the table of further questions
B4: Expected preparation prior to site visits (data-base of documentation: company annual report, archival documents from company's website, interviews conducted to the case company, industry background, and relevant empirical research)

C. Outline of case study report
C1: Transcript interview data
C2: Summary of case
C3: Within-case analysis
C4: Cross-case pattern match

Appendix 6: Two sample interview transcripts

HAIER

(Interviewee: e-business manager at Haier Group, the date of the interview: Friday, 09 July 2004)

Interviewer: I want to know the main e-business applications in your company and their impacts on sources of competitive advantage.
Interviewee: I want to review the history of our e-business applications. We started to do e-business in the first half of 2000. I am one of the participants. Our CEO attended Davos International Economic Conference in Switzerland in 1999. Through this meeting, he realised the importance of e-business. When he came back, he asked IT department to carry out a project of e-business adoption. He wanted this project to be completed soon. We had no experience but we wanted to adopt e-business at a large scale. Therefore, we established an e-business company. This company derived from the previous IT department, which was called the plan centre. The functions of this plan centre include two areas: planning and managing projects and managing IT.
We established a project team joined by four key members from IT department. We wanted to adopt B2B and B2C at the same time. This project progressed at high speed. We invited public bidding in February 2000, and then signed the contract. On 18 April we launched a B2C website called ehaier.com. By then, customers could buy our products online. We planned to firstly operate it in two cities - Qingdao and Beijing. But very soon we realised it was not possible to provide B2C services to two cities only based on the features of Internet.

Interviewer: Can customers really make their orders online?
Interviewee: Yes, this website is designed for consumers. About the impact of e-business applications, I will explain it later with details.
We reinforced the speed of the project. After two months of testing, by June this system was operated at national scale without any big problems.
My deepest feeling was that our leaders of the group attached much importance to this project. We recognised the strategic role of e-business. As a consequence, we needed a long term plan for e-business. Therefore, we wanted to hire a consultant company in the beginning. But they asked for a fee of RMB ¥ 6 million. It was so expensive that we decided to explore e-business in-house and using RMB ¥ 6 million as our research grant. According to the current standard, this investment is high. For example, we only need to pay half of the cost of IT for what we paid. What I talked in the former is in the area of B2C. In the B2B area, that is e-procurement, the course was the same. The system was adopted in June. The impact of B2B in terms of procurement is significant. Previous, all the suppliers came to our company in person to offer their price and to attend the bidding.

Interviewer: Now you invited public bidding via Internet.
Interviewee: We firstly test it in the products of air conditions in 2000. Upuntill October 2000, the purchase of raw materials was all conducted via internet.

Interviewer: How about the payment?
Interviewee: For the payment in B2B, we have cooperated with Chinese Commercial Bank. We have developed an e-payment system. At that time, only Chinese Commercial Bank could provide this service. But this bank has it's a weakness of limited network

coverage.
The positive impacts of B2B reflect on several areas.
1) At the same time of applying e-business, we carried out a project of optimising supplier-network via Internet. Supplier-network optimisation is very important to big companies. After this project, the number of our suppliers decreased to about 700 from pervious 2000. Small suppliers were dropped out through selection e.g. some suppliers without IT equipments or IT specialists. Our aim of this project was to search for big suppliers. Currently around 40 or 50 of our suppliers are on the list of top global 500 companies. Moreover, some big suppliers built factories in Qingdao for our company especially because of our large purchase scale.
2) Another impact is cost reductions which include the cost of purchase. This is mainly achieved through cost reductions from suppliers so that they can offer better price to us. Meanwhile, our costs of production decreased too. Now we produce to orders and procurement is also based on order information. Order information can be obtained through Internet. Now for each order, there are at least three suppliers competing for it.

Interviewer: So, your company proposed to redesign business process in order to guarantee the instant information communication.
Interviewee: This figure is our current business processes. In order to investigate the impacts of e-business on organisational structure, we have to mention the importance of business process reengineering. This process is based on information flows.
The structure of Haier' information flows include several basic blocks. Dealers, suppliers and manufactories form the three blocks: procurement, sales and production. The supporting flows/blocks can be divided into two categories. The first is to guarantee the completion of the orders; and the second is to guarantee the process of making the orders. The latter category includes research and development, human resources management and customer relationship management. The former category includes capital management, equipment management and quality management.
This figure reflects the current business processes. Previous, there were many functional departments. Each project and product was an independent organisation which was responsible for its own procurement, production and sales. Resources couldn't be shared among departments. Through restructuring, previous organisational structure was broken down. Current organisational structure is reengineered based on the information flows.
Let's first talk about the flow of completing orders. All the financial departments were merged to a capital flow company in order to provide capital service for the group. The same happened for the equipment provision company and the quality control company. All these companies currently provide services to the whole group. By this way, the group has improved professionalisation in each functional area as every company only concentrates on what it is good at. The relationships among every department/ company are marketing relationships, which means buying and selling services to each other. What supporting this is the synchronous capital flows. We call this internal marketing chain.
The basic flows in the corporation include information flows, material flows and capital flows. The basic supporting structures in the enterprise are organisational culture and information systems. Between these two structures, the structure of information systems is above the organisational culture.
One thing is worth mentioning is the zero operational capital. Our dealers can only get our products when they paid the bill. Meanwhile, as most big companies we can pay our bills to suppliers some times later than we had the materials. Moreover, we complete the orders very quickly. Therefore, all these processes provide the opportunity of a zero operational capital flow. The short production cycle derived from two factors: firstly, business process redesign; and second the adoption of enterprise information systems.

The high speed achieved by using information systems guarantees that our company can use sales profits to reinvest in production. Business process redesign and new methods of employing enterprise resources have shorten the cycle of ordering taking to production several times than before.
Therefore, the redesign our organisational structure and the adoption of enterprise information systems have improved our operational efficiency. Now we have realised information synchronization which then has improved our response to marketing forecast.
Now the flows are clear and organisational structure is flatter than before. The operational model has been transformed from leadership/functional-orientated to marketing-orientated.
Now the initiation is end users. Hence the key is order flows. Accordingly, we can better manage our resources of end users and suppliers. Or we can say achieving better supply chain management.
We use B2B to manage suppliers and use both B2C and B2B to manage buyers. 1) B2C, customers can make their orders through Internet. 2) B2B, we have a customer relationship management system to manage dealers.
We need to consider all kinds of dealers' situations. As we require them to pay us immediately, small companies cannot be our dealers. Some big dealers have out of date information systems. So we have to use traditional methods to manage these dealers. Some dealers make their orders online. Some dealers connect their systems with our systems. So we will directly know their inventory and procurement needs.
The general rule is to reinforce that all the information must automatically come from end users, referring to dealers, rather than revised by our staff. Hence, we pay attention to the application of bar code. Now we are considering the adoption of RFID because of its capability of checking product quality. But the adoption needs huge investment.
Collecting information from end users also includes collecting information on employees' salary and working result. We have a culture called reflecting on your work every day. Previously, this referred to write working report every day using paper. Now we use an information system to do this job. This system will check employees' attendances, their ability to meet deadlines and costs. All these targets will be divided into workloads of each day. The system will record this information and automatically analyse it.

Interviewer: How can you divide the workloads of a service department into a quantitative format?
Interviewee: Yes, it can be done via its impact on marketing although it's a little difficult. In the end of each year, we will make a plan based on marketing requirements. We set benchmarks which will be specified according to each employee. All these benchmarks can be recorded in a quantitative format so they can be recorded by information systems. Of course, some are also records in text format.
The typical features of our information system are obtaining data from end users and business process redesign. We can firstly talk about our IT applications. Following it, we can talk about e-business in our company. China hailed Haier and Lenovo Group as the national role models for IT applications.
I can introduce the main points mentioned by our CEO when he talks about the experience of IT applications in Haier. The key point of enterprise information construction is to build the foundation e.g. organisational structure and business process redesign.
Enterprise information construction reinforces flows or processes. All the business processes must be organised according to flows. Organisational structure also has to be organised according to flows. For example, there are material flows, commercial flows and capital flows.

Accordingly, organisational structure should be restructured based on the format of flows. If we haven't redefined our business processes, it is difficult to apply information systems and share information. Moreover, without it, there may have duplicate investment in information systems among different departments in terms of software purchase and human capital.
Previously, we were production-oriented. Now we are customer-oriented. We produce what customers want. As a result, all our work is carried out around order flows. Additionally, we need motivations. We reinforce speed and innovation. Speed means shortening production life cycle. And innovation is the core of our organisational culture. We aim high although we are not strong compared with international famous companies. Our aim is to become an international famous brand. So the best way to achieve our aim is through innovation.
The informatisation in China started late compared with Western countries. We began to build our websites since 1996, which was rather early as a Chinese company. Since 1999, we began to build Intranet. The earliest application was to use emails to transfer files. Then we applied Office Automation to share internal information. Next, we applied information systems in different functional departments. Usually, Chinese companies will adopt financial systems first, then sales and procurement systems. Since 2000 we began to redesign our business processes and organisational structure although the plan was made in 1999. In 2000, we adopted an ERP system, which is mainly used for procurement and inventory management. Then this system will expand to include sales and quality management and of course some other small systems.
E-business department belongs to the plan centre. Therefore, we can consider IT construction from group perspective. As a result, the investment of our e-business project is huge.
The turnover of B2C sales was not big. There are two reasons. Firstly, e-commerce is not well accepted by customers because of their purchase habits. Secondly, it is the problem of delivery. How to solve delivery issue is the key for e-commerce as we have to compare the current delivery costs with traditional ways.

Interviewer: What is your dealer-network? Are they department stores?
Interviewee: Yes. We have several advantages of adopting e-commerce. Firstly, we have brand advantage. Second, we have good sales network and delivery network. E-commerce does not only mean direct sales. We send products to customers from our sales network. This means that we should have a delivery system. Currently, we do not charge delivery fees to our customers. This is very convenient to our customers who are in the remote rural areas because they may have difficulty in buying our products before as there may have no Haier dealers.
Our B2C can solve several customer needs, which include:
1) Customers, who have difficulty in buying our products before, can know our products from our website.
2) Customers can buy personalised products from our website as the website support personalised orders. (Interviewer: Will these products more expensive? interviewee: No.)
3) Customers can buy our products online for their families or friends in different cities.
4) Some advantages relates to e-business' characteristics such as time saving. Furthermore, some customers may buy online just for catching the fashion.
The payment methods of e-business include online payment and cash-on-delivery.

Interviewer: Do you provide 7X24 services in e-business?
Interviewee: No. I don't think customers need 24 hours service. Our system can automatically confirm orders. We provide e-business services every day but not during the nights.

We have provided e-business services for four years. However, there are no competitors in our industry who have adopted it.

Interviewer: Why not?
Interviewee: This may be related to their aim of e-commerce. Currently, we may not make profits from e-business. Instead, we need to invest heavily. Our aims are to better service customers and promote our brand and increase our customer base. Some companies may not adopt e-commerce because e-commerce currently cannot make profits.

Interviewer: Does your company make profits from e-business applications?
Interviewee: We are not losing money because of B2C operation. The loss mainly comes from delivery costs as we do not charge delivery fee.

Interviewer: What are the main sources of competitive advantage of Haier?
Interviewee: Our brand. Brand includes many details. E-business is one of them.

Interviewer: How will e-business applications affect competition and sources of competitive advantage? Have you ever evaluated this?
Interviewee: We haven't evaluated. We didn't make big profits from B2C. Our aims of B2C are to promote our brand and to promote offline sales.

Interviewer: Have you achieved your aims?
Interviewee: We can answer it from several perspectives. These include visiting times of our website and our registered members. Our website is browsed much more than other Chinese companies in the same industry. In China, our website's browsing time is only second to Lenovo Group which is in IT industry. Another is e-business' impacts on offline sales. Many customers get our products information from our website and then buy the products offline. Customers think that our website is a better channel to compare different products.
Companies who apply e-business are usually doing better in terms of exhibiting their products than companies who don't because selling products online is the strongest motivation of building a better website.
Currently, we are redesigning our e-shop so that we can better introduce and present our products, and collect customers' feedback.
There is a first mover advantage. If customers want to search for some product information online, they may find that Haier can provide best information to them. The more information we can provide to our customers, the more likely they will buy our products.

Interviewer: Currently, your company is the only company to provide this information, isn't it?
Interviewee: Other companies' websites may provide product information but not with such details as ours because their websites are not designed for e-commerce.

Interviewer: What are the impacts of e-business on industry structure?
Interviewee: We are the example model of China. In order to promote e-business, Chinese government will first build some examples. Then other companies can imitate them. At Haier University, we have talked with staff from many companies who wants to learn our experience in e-business and information system management. These companies are not only come from our industry.
I am responsible for the management of our company website. Do you have any suggestions on our website?

Interviewer: I think that you have already done well compared with your competitors. Your website provides lots of information on your company's culture and management concepts which I do appreciate.
Interviewee: Our leaders think it is not enough. They pay a lot of attention to our information system construction. They always visit our website and give us suggestions. In my view, to adopt e-commerce, the key is that leaders attach importance to it.

Interviewer: What are the instructions of e-business application in your company?
Interviewee: Applying e-business from a group point of view and getting the support from senior management. If leaders attach importance to it, correspondingly organisational structure will be provided which is important. For other factors, we can learn by doing.
Another point is to find a good partner. We have done B2B before, so we cooperate with SAP who provides us good products and services.
After all, I must reinforce support from senior management so that we can solve problems of organisational structure and business processes.
Additionally, we try to keep the consistency of our project. For example, all the IT staff who is the members of the project has to sign a longer contract to prevent them going to other companies in the middle of the process.

Interviewer: Based on your company's experience in e-business, could you please describe the main problems encountered in terms of e-business applications?
Interviewee: There is no problem in terms of the project itself. In terms of management, there are conflicts between online and offline channels because we use offline sales network for the delivery of online sales. Although the dealers have close relationships with us, dealers need to maintain their own profits. Sometimes, the online sale policies were different from offline sale policies. For example, we apply the same price to a product in different regions. But dealers may set different prices for different regions.
The turnover of our online sales is not large. This is a bottleneck of e-commerce. The reason is the unpopularity of e-commerce in China. It is difficult for one company to change Chinese consumers' purchasing habits.

Interviewer: Looking back on your company's experience in e-business in recent years, can you describe your company's current e-business strategy and its e-business strategy for the future?
Interviewee: Adopting B2B and B2C at the same time and at a group scale. Let e-commerce creates new value for our company. And let e-commerce become a business to serve our group and other companies. In the future, we may become an e-shopping mall who sells lot of products rather than only home appliances.
We haven't set our sales target from quantitative perspective because we haven't found a suitable sales model. We are looking for a model to increase our online sales rapidly. Currently, our online sales turnover increase 20% every year. This is far from enough for us.
The key problem is delivery as our sales network hasn't expanded to remote rural areas. We also use websites to collect and analyse end users' information.

Interviewer: Are there any good experience from foreign countries that we can learn ?
Interviewee: Maybe TESCO.com.

VANTONE-EHOUSING

(Interviewee: the manager of information management, the date of the interview: Friday, 16 July 2004)

Interviewee: I am responsible for the management of our company website. I have researched your case companies in the real estate industry. My personal view is that SOHO (Company website: http://www.panshiyi.com/english/index.asp) is a pioneer in e-business applications in the industry. But its pioneering applications are not in technologies of e-business. It's the company's better capability of combining the concepts of marketing and architecture design. The company is doing better in the website design and the integration of online and offline activities. The applications mainly focus on marketing promotion. For example, Mr Pan, the CEO of the company, chats with the net-friends in the web chatting room every week. Moreover, the company will give some presents to the most active participants.
The building of our ehousing website began in 2001. Since our company is not in pure e-commerce industry, we thought that we were successful if we could make the website running. Our CEO understands that the maturity of a business model needs time.

Interviewer: As to your business model, your company has mentioned to be a Dell company in real estate industry. Therefore, do you mainly learn experience from Dell's model?
Interviewee: Not exactly. The idea came from our CEO's business trip to USA. He found that in American about 80% of house trading happened via Internet. Although we thought that this American model is a better model, how to use it in China is still a big challenge. It needs long time for exploring. Land in the USA is a private property so people can decide whenever he/she wants to build his/her houses. However in China we only have the using rights of land. Therefore it is not possible for a company to develop a small land as the company has to consider the cost of development.
We moved the whole developing processes to our website because we think the web-based model has its own advantage. For example, it is based on customers' needs. However, in the traditional model (so called Hong Kong model) companies usually develop houses first and then consider marketing. In the traditional model developers will also consider certain customers' needs through marketing research. For example, they will decide their target customer base and the similarities of these customers. For instance, the main customer base of Vanke is middle-class. Therefore, Vanke will consider the similarities of its target customers in terms of purchasing habits and buying power.
However, in our model our aim is to meet the personalised needs of high-end customers. But after we implemented this model, we found that it is very difficult to fully meet personalised needs.
Now we have more company customers as lots of big companies will order personalised buildings and ecological parks, etc.

Interviewer: As to the company customers, there may have plenty of interactions between your company and these customers even though there is no Internet involved, right?
Interviewee: No as we are in two different industries. From the perspective of traditional model, we consider more often about the users, that is the B of B2B. We have lots of company customers. From business unit perspective, we pay attention to B2C as well but there is a threshold of investment which is over 5 million RMB. If less than this amount, we could only deliver limited personalised services.
We have been keeping on exploring B2B and B2C. Since 2001, we have redesigned our

website six times. The changes were based on all kinds of needs from our customers. We chose a plot from one of our big project to carry out an experiment. We have built six sample houses. We have also built shops for this purpose.

Interviewer: Do customers accept better online interaction or offline interaction?
Interviewee: This is a two fold question. On the one hand, customers need all kinds of information as house purchase is a big investment. For example, customers still cannot accept online transactions considering the high risk involved. So online shopping in real estate industry is still relatively difficult to realise. However, customers can fulfil their personalised needs online. For example they can make orders online, and they can express their personal needs online.
We can build four types of buildings: single detached houses, office buildings, public buildings, and government office buildings. Customers can order all these types of buildings online. Among them, the most mature business is single detached houses.
The basic business processes are: collecting customer needs and the development process. We have developed a system as a communication channel. By using this channel we hope to meet the needs of all kinds of customers. We do not want to complete the whole trading process via Internet but we can complete the marketing functions via Internet.

Interviewer: Does it mean you have to design lots of virtual tours?
Interviewee: Yes, for example personalised design style of their house plans. Our customers can choose the design style of their stairs, the number of their garage if their requirements are reasonable in terms of architecture design. What we can do is to let our customers experience our services via this system. Many foreign companies provide this kind of services.
Some customers clearly know their needs. For example they know how much money they want to invest and what kind of design style that they want for their house. These customers will firstly search for the related information. Our website can provide this information.
At the early stage of online ordering process we can accept the requirements from the customers who clearly know their needs. Meanwhile we collect customers' basic needs and lead their needs if they are not very clear about their needs. Our aim is to cultivate potential customer needs.
From a marketing point view, we want to build a brand. When customers have the needs of ordering house online, they will come to our company. We hope to present our brand to our customers and to meet their different needs.

Interviewer: Do you think that Internet strengthens humanised service?
Interviewee: Yes. Actually this humanised design can be done from many perspectives. On the one hand, we can optimise business processes; on the other hand, we can do it via website interface design.
According to my understanding, many web-based companies such as Sina.com have some employees to especially do humanised design. From an interface design point of view, most end users do not understand the technique details. What they want is a simple and easy to use website. And from a business process point of view, we need to integrate customers' experience of using the website with the company's business processes.

Interviewer: As the result of adopting B2B and B2C, have the business processes been redesigned accordingly?
Interviewee: This is an interactive process. Online and offline processes influence each other. We revise our online model according to our offline model and vice versa. The

online model supports and influences offline model.
In the front office (marketing system) is the exhibition to the potential customers. When they sign the contract, they can enter our system (back office), which is the system under construction.

Interviewer: Why do you separate marketing/sales system from back office system?
Interviewee: There are a few databases shared by these two systems. The difference of these two systems is that one for managing marketing and sales activities and the other for CRM.
In the following I will concisely introduce our business processes to you. Business executives deal with orders which come from the marketing and sales system. Business executives deal with all the issues that are related to business. And the system manager defines the authority levels of business executives. The system manager manages the whole system. And every role has certain authority level.
Business executives make judgements and assign the orders to business managers. Usually business executives lead several business managers. If business executives categorise an order as positive, they will assign the order to a business manager. Business manager will follow up this order and try to update it into an intended order. Orders have several levels. The first level is intended order which is before the contract has been signed.
When a customer's order has been categorised as positive, we will provide follow up services to him/her. By this time the customer is provided with information such as the land bank information. The system defines these functions via models which define types of services corresponding to related types of customers.
Business managers communicate with customers via all kinds of channels. Then they will make a pragmatic judgement and then feed back the judgement to business executives, who will update the order level accordingly.
During the whole process, business managers provide services to customers. And all these services will be reflected online. Business managers will provide corresponding services to each model. But before a customer signs the contract, he/she cannot access to the financial model of the company. When their orders have been updated, customers can enter back office network.
Up untill now, business managers will recommend corresponding land and design typed to customers based on their requirements. We must reinforce that business managers do not refer to a specific person rather it refers to a team or a project company which may include people from difference functional units in order to meet different customer requirements.
We divide services into two parts. One is process based services; the other is continuous services. Process based services include choosing land and house plans, bidding, and construction. Continuous services include managing finance and customer files. Or we can say customer relationship management. There is integration between these two systems: the follow up services to potential customers and signing the contract with customers.
We plan to use this back office system before this October.

Interviewer: After years of experience, can you talk about the contribution of e-commerce to your company's competitive advantage or the optimisation of business processes?
Interviewee: In the beginning, most of the real estate developers who adopted e-commerce just for the aim of catching fashion.
Even now, e-transactions do not exist. Maybe we can call it as e-commerce in a broad term. We use Internet to communicate with our customers. Internet is a communication channel like all other traditional communication channels such as advertisement,

reporters and newspaper. Since this channel is turning to mature step by step, we have no reason not to try it.

Interviewer: Is your attitude to e-commerce based on a forward looking view or based on some evaluations?
Interviewee: First of all this is a general direction. On the one hand, this is based on a forward looking view. For example, many people took the attitude of 'wait and see' two years ago. But we adhere to doing it. By that time, we need a forward looking view. Websites as a channel is turning to mature gradually. Now people adopt it more reasonably than before. We think the general direction is right as other communication channels need high investment although the pay off is less compared with before. Websites as a new channel has its practical function.
In terms of business applications, our customers come from both online and offline. Potential customers, especially those who want to order single-detached house, mainly come online. These customers include some authors and artists whose dream houses are quite personal. In order to realise their dreams, we need supports of government policy as well as economies of scale. We need to pool these customers together.
Personalisation has its limitation. Some customers have strong buying power. They can pay for personalisation in each process. However, other customers can only pay for limited personalisation. For the latter, economies of scale is possible.

Interviewer: From head office point of view, can we say that business process redesign has been done only in your company as an experiment?
Interviewee: No Chinese real estate company is on the list of top global 500 companies. Foreign real estate companies focus their business on specific area of the industry value chain. For example, some companies may focus on investment, and some may focus on construction.
However, Chinese real estate companies are all regarded themselves as developers who involve all the activities of the industrial value chain. We believe Chinese real estate companies will become more professional in the future. We need to have a forward looking view to this. Currently, the mother company defines itself as an investment company. Currently, our profits are mainly derived from housing development. For example, Vantone has several core business units e.g. residential house development, land development, commercial real estate, and made-to-order services. On average, the profits of house development are around 10% to 30%. But the profits from made-to-order services are much higher because of the relatively low cost operation. The main activity is to redesign business processes. In the future, about 60% to 80% of the profits of the whole group will come from our company's made-to-order services.

Interviewer: Has your company evaluated your e-commerce applications in these years?
Interviewee: Yes, we have done some evaluations internally. Also, we hired some consultant companies to help us to do the evaluation.

Interviewer: Has your company had an e-commerce strategy?
Interviewee: Yes, the mother company outsourced this to consultant companies.

Interviewer: Will your company's c-commerce strategy and business strategy influence each other?
Interviewee: In the end, we hope e-commerce will influence business processes and organisational structure.

Interviewer: Has this kind of adjustments already been done?
Interviewee: Yes, and I believe Gemdale and Vanke have done the same.

Interviewer: Can you talk about your company's e-commerce strategy?
Interviewee: It mainly focuses on quantitative perspective such as the turnovers.

Interviewer: Do you have corresponding implementation strategy?
Interviewee: We regard the e-commerce plan as an ERP process which needs to be done step by step. Beginning from OA, we firstly though we can use OA as the e-commerce platform. And head office can communicate with subsidiaries via an OA platform. But we then found an OA platform has lots of bottlenecks. We regard e-commerce as one part of enterprise information system construction. After adopting OA, we will use a design platform, a message platform, and finally an ERP. We will redefine enterprise resources from view points of business processes and information.

Interviewer: Looking forward, can you describe the main problems encountered in terms of e-business application?
Interviewee: The resistance is mainly from offline factors such as business environment, customers' purchase habits. Customers who were born in 1950s or 1940s need more time to accept e-business. Another factor is government policies as China is in the process of renovation. Therefore lots of uncertainty is involved. Also it is difficult to realise fully interaction with our customers via pure online activities. Only part of the activities can be moved online.

Interviewer: From industry perspective, how will you evaluate e-business' impacts on the industry considering that many real estate developers do not regarded e-business as their core business?
Interviewee: Many companies adopted e-business by carrying out an e-business project. As to any new business opportunities, some companies like to wait and see. Some companies focus on short run profits. And less company would like to invest for the future.

Interviewer: So, by investing for the future, has your company sacrificed some short run profits?
Interviewee: Certainly. Now this business is at the stage of exploring as every business has its life cycle. For the first three year we have to invest hugely.
After few years of experiment, we are sure that we are in the right direction as our customer number increases rapidly. Moreover, our turnover grows rapidly. It has become a main contribution of our group's profits which is over 50%.

Interviewer: Has the high profits attracted some companies to follow your step?
Interviewee: Not so many as developers can still earn fair profits from traditional development method. Why shall they invest for the future? Moreover, most of the real estate developers are small company who cares more about short run profits.

Interviewer: Based on your observation, could you please describe the significant actions that competitors may already have taken in terms of e-business applications?
Interviewee: Yes, Oriental Home (www.orienthome.com.cn) as a construction material supplier is doing well in the downstream of the value chain of real estate industry. Real estate developers who are in the top 50 list in China may build company websites. Rarely will they invest in e-business. I have researched on Vanke for a long time. I am not sure how its internal operation goes on. As to its company website, I think it is mainly used for promoting its company image.
Interviewer: What is the impact of e-business on value creation? For example, the new way of value creation because of e-business applications. Could you please give some

examples?
Interviewee: Yes, it brings new customers which can bring more profits. We need to seek first mover advantage. When customers have the need of ordering a house they can find our company via all kinds of communication channels.

Interviewer: What are the main sources of competitive advantage of our companies?
Interviewee: The ability to redesign the whole business processes, and the whole industry value chain. Finally this advantage will be expressed by our product differentiation. We believe when the industry reach its maturity, the competition will focus in product differentiation.

Interviewer: How will e-business applications affect competition and sources of competitive advantage?
Interviewee: We will not regard Internet as our core competency as some pure e-commerce companies. After all we are in the real estate industry. E-business is only a tool or channel for use.